Adult Audiologic Rehabilitation

Third Edition

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Foreword to the Third Edition

The third edition of the Montano and Spitzer text on auditory rehabilitation comes at an opportune time. Many recent or current developments have the potential to affect hearing health care. These include such things as self-administered hearing tests, hearing aid self-fitting software, over-the-counter hearing aids, and telemedicine. Some may see these developments as a threat to the profession of audiology, but others are in the process of adapting to, and taking advantage of, new and emerging possibilities. What a great time for introspection and planning! And what a great opportunity for renewed and increased attention to aspects of audiologic management that go beyond sensory management! The provision of the best possible hearing capacity is obviously an essential first step. But the concept of automatic "trickle down" to optimal function, activity, participation, and quality of life is untenable. Hearing aids do not restore normal hearing, nor do they alleviate the contributions of other factors such as loss of visual acuity, mild cognitive impairment, personality, adaptability, self-efficacy, lifestyle, and aging. This raises the issue of the contrast between a client-centered and a hearing-centered approach—helping people who have a hearing loss rather than treating hearing loss in people. Many of the authors represented here have been making these points for a long time. Others are providing insights to those changes that have the potential to impact audiological practice. If and when the profession seeks to identify itself as the provider of holistic hearing health care (and establishes a way to fund the expanded services), this comprehensive and forward-looking text will serve as an indispensable guide.

—Arthur Boothroyd, PhD

Foreword to the Second Edition

Audiologic rehabilitation involves several stages: Identification and evaluation of hearing loss, treatment, and post-treatment care, emphasizing the point that audiologic rehabilitation involves more than just the final stage. It is unfortunate that the term *audiologic rehabilitation* is often misinterpreted as referring only to this final stage. It is important to bear in mind the broad scope of audiologic rehabilitation and that the goal of each stage in the process is in fact improved communication. The benefits of audiologic rehabilitation can be maximized by means of early identification, accurate evaluation, effective treatment, and efficient post-treatment rehabilitation.

Whereas identification, evaluation, and treatment are important stages in audiologic rehabilitation, they are only part of the process. Many audiologists have focused their efforts on the early stages of audiologic rehabilitation with the result that the post-treatment stage is neglected to a large extent. The neglect is significantly greater for adults than for children. This may be because of the difficulty and effort required for effective post-treatment rehabilitation, or because the early stages of the rehabilitation process show improvements more rapidly with less effort; that is, more bang for the buck, or simply more bucks. Whatever the reason, the post-treatment stage of the rehabilitation process has not received the attention it deserves. Rehabilitation that ends at the conclusion of the treatment stage is rehabilitation incomplete.

The previous foreword by my esteemed colleague, Mark Ross, describes the importance of and commitment to post-treatment rehabilitation in a previous, well-funded era. In the years that followed, the inevitable competition for diminishing resources resulted in the post-treatment stage of audiologic rehabilitation receiving less attention and less effort than it deserves. Fortunately, there is a cadre of dedicated researchers and clinicians who have maintained the emphasis on rehabilitation in all stages of the rehabilitation process and have carried the field forward, even with limited resources. This volume by Dr. Joseph Montano and Dr. Jaclyn Spitzer, now in its second edition, stands out as a beacon in a rough sea of competing and often misguided priorities. The con-tributors to the volume are leading authorities who have pioneered new approaches in the field. Many of the contributors are from countries other than the United States, thereby providing an international perspective to the volume.

The breadth of coverage is substantial, as reflected by the large number of chapters on the various topics relevant to adult audiologic rehabilitation. The first section of the volume begins, sensibly, with a brief outline of the book's goals and scope, followed by an historical review that places adult audiologic rehabilitation in perspective. The next several chapters provide important background material on the nature of adult audiologic rehabilitation, the classification of functioning and its relevance to the rehabilitation process, and the psychological effects of social stigma in the target population. The last-mentioned chapter is particularly important to understand the multidimensional nature of the rehabilitation process. It is not merely hearing loss. It is hearing loss compounded by the sequelae of hearing loss.

Assessment and verification are particularly important issues and are dealt with in the second section of the volume. Self-assessment is a critical aspect of the evaluation process, and this section contains several chapters on different aspects of this broad area. Although self-assessment is inherently subjective, the client's perception of the efficacy of the rehabilitation program is a major factor affecting the success or failure of the program. In this context, perception is the ultimate reality. The last chapter in this section deals with the particularly important issue of verification.

The third section of the volume, The Rehabilitative Toolbox: Therapeutic Management, is by far the largest and provides excellent coverage of the substantial armamentarium of tools available to the rehabilitative audiologist. The chapters in this section provide valuable information on the merits of the various rehabilitative techniques and the considerations that need to be taken into account in their implementation. There is no single best technique. An understanding of the capabilities and shortcomings of each technique is needed to select a technique, or

combination of techniques, that is most appropriate for each client. It is thus valuable to have broad coverage of the large array of rehabilitative techniques in a single volume. This is not a cookbook. Each chapter deserves careful reading to appreciate the capabilities of each technique and its potential value for each client.

The last section of the volume deals with special issues and expanding the scope of audiologic rehabilitation. The opening chapter in this section deals with evidence-based research. This is a rapidly growing area of research with important implications for funding and the allotment of resources. Evidence-based research with positive results will do much to secure the viability of audiologic rehabilitation in a future of increased competition for limited resources. The next chapter in this section reflects the remarkable advances in the field in that audiologic rehabilitation has expanded to include appreciation of music in addition to speech understanding for adults with cochlear prostheses. The field has also expanded to include a broader view of vocational issues as dis-

cussed in the chapter dealing with this topic. The chapters on older adults and on auditory and cognitive processing reflect the growing recognition of the importance of age-related issues in audiologic rehabilitation and the importance of cognitive processing in addressing age-related auditory deficits. Tinnitus is a major problem with no simple solution, though progress is being made on treatment. The chapter on this topic provides insightful coverage of this problem and current rehabilitative techniques. The last chapter, logically, deals with current and future research needs.

This is an impressive volume containing a wealth of information. The range of topics and their relevance to practical issues in adult audiologic rehabilitation is impressive. The chapters deserve to be read and reread to gain an in-depth appreciation of the multidimensional considerations to be taken into account to maximize the efficacy of adult audiologic rehabilitation. Read, understand, and make good use of the valuable information contained in this substantive volume.

—Harry Levitt

FOREWORD TO THE FIRST EDITION

I had my first experience with the concept and practice of audiologic rehabilitation (AR) when I was admitted as a patient to the AR program at Walter Reed Army Hospital in January 1952. Essentially, this was the type of program from which the profession of audiology would later emerge (see McCarthy, this volume). For the 2 months I was there, I was exposed to the best clinical practices that existed at the time. Classes were conducted by former teachers of the deaf, speech correctionists, and lipreading teachers (the term *speechreading* had not yet been coined). For the most part, the lessons consisted of various speechreading and visual training exercises, supplemented by some auditory training sessions (following a classic Carhart approach). These two activities basically defined AR at the time. Also included in the program were occasional didactic lectures on various topics (e.g., the audiogram, anatomy and physiology of the auditory system, etc.). Appointments for hearing aid fittings and follow-ups were spaced throughout the 2-month period. The hearing aids provided to us were monaural body-worn vacuum tube aids, and we were told we were lucky to have them. Patients just a few years earlier were issued a duo-pack hearing aid, which required separate packs for the battery and the amplifier, with a rather large wire connecting the two.

In retrospect, although we couldn't really appreciate it at the time, those of us who were able to participate in that program were indeed very lucky to be where we were, receiving the kind of care we did. I don't think any of us fully understood the reality of what a hearing loss would mean in our lives. It was very easy to underestimate the full and eventual impact of a hearing loss. At any rate, in that setting and at that time, the issues facing someone with an "invisible" hearing loss paled in comparison to what we saw of the men with combat injuries at the main hospital. Complaints and self-pity were simply not acceptable reactions. While we didn't choose to attend the program, being there turned out to be a turning point, at least in my life.

In the company of others, I learned to accept myself and the reality of my hearing loss, perhaps the most significant goal in any AR program. While this was not an explicit objective of the program, it arose naturally as a consequence of being somewhat sequestered for 2 months with a group of young men with similar problems. Later, as a professional audiologist, I thought of that program as a kind of AR Camelot—the ultimate model to which we could aspire but never really attain. Still, the question arises: Are there any lessons we could take from our early romance in "Camelot" and apply them in this day and age? I think there are.

The first is that the hearing aid selection procedures, primitive as they were, were viewed as an ongoing process (as I recall, one appointment a week was scheduled over an 8-week period) and completely integrated with the rest of the AR program. Questions about hearing aids, difficult listening situations, speechreading issues, and so forth could arise—formally or informally—throughout the day. From a conceptual point of view, hearing aids were not separated from all the rest of the AR activities that took place. This is somewhat at variance with how AR is now generally practiced. Currently, hearing aids are selected and several follow-up appointments are scheduled. But the need for, and provision of, any other type of AR service is completely happenstance—sometime yes, sometimes no, sometimes this, and sometimes that. Not so in Camelot; all was integrated into a single curriculum.

The second important lesson I think we can take with us is that the group experience was perhaps the most valuable benefit of the program. I doubt this was an explicit goal of the program. It was, rather, a fallout benefit that proved to be profoundly effective despite being inadvertent. Just the fact of being part of a group, of sharing our experiences and concerns with other young men in the same situation, helped us to accept the reality of our condition. We would joke with one another about "being on the air," to the point where the daily use of a hearing aid was common—and expected. As audiologists, we are now keenly aware of the advantages of group management; the fact that I can still feel its impact some 56 years later is a testament to the power, and effectiveness, of a group program.

A third observation regarding the Walter Reed program is that it wasn't voluntary. We were simply transferred there, with no option to refuse. But I think it worked. Many men who in other settings would have to be dragged kicking and screaming into a therapy room, or more realistically simply wouldn't go, were enrolled and then benefited from the inclusion in spite of themselves. Clearly, this is not exactly a formula that can be applied in any other kind of situation! We don't draft people into an AR program. It does suggest, however, that even people who are reluctant to engage in a therapy program can be helped, as long as they can somehow be convinced or cajoled to participate.

I do believe that this can be somewhat achieved if a short-term group AR program were considered to be a routine component of the hearing aid selection process. In other words, just as a client's hearing status is expected to be evaluated by an audiologist prior to the hearing aid fitting, so too should such a program be instituted subsequent to a hearing aid selection. People would be free to ignore the recommendation, of course—we are not a totalitarian society—but, for example, how many people ignore their orthopedist's suggestion for a course of physical therapy after a surgical procedure? I think we can agree, not very many. Clearly, the perception of need is completely different in these two situations, which I believe is due to a society that trivializes the possible consequences of a hearing loss and underestimates what can be achieved with an AR program. Even a short-term, post-hearing-aid-selection AR program can pay big dividends for many people with hearing loss.

What was provided in the Walter Reed AR program has not been, and could not be, replicated in its entirety anywhere else. At the time it was developed, during World War II, nothing and no expense was too much for "the boys." In retrospect, however, it now seems like overkill; it is likely that the same results could have been achieved with a somewhat truncated program, or one constituted a bit differently. But we have no way of knowing now. We have no objective evidence of the program's efficacy (though I would gladly provide my personal testimonial regarding its effectiveness). We didn't have the scholarly insights and information on AR that exist currently. During that era, AR meant being fit monaurally with a body-worn, vacuum tube hearing aid and attending speechreading and occasional auditory training classes—period. Now, on the other hand, we have a comprehensive body of information applicable and relevant to the entire AR process. And, it seems, just about all of it is included in this book.

When Dr. Montano and Dr. Spitzer forwarded the detailed outline to me, my initial response was, "Wow!" I jumped at the opportunity they gave me to write the foreword. I have spent my entire professional life dealing one way or another with AR, but until I saw the outline of topics contained in this book, I never really appreciated just how much audiology has changed and developed since the early days. The authors selected to write the chapters are a compilation of the best and the brightest that the profession has to offer. The book is divided into four logical sections, each of which deals comprehensively with a different aspect of AR.

The first section of the book lays the groundwork. In this introductory portion, AR itself is precisely defined (we will see that it involves more than is at first apparent) and placed in an historical framework. Perhaps because of my own history, I find this a very appealing topic; we really don't know where we are or where we're going unless we can appreciate where we've been. This chapter does that for us. It provides a frame of reference we can use when we examine any efforts in this area, our own as well as those of others.

The broad area of assessment is covered in the second section. One convincing indicator of how far the profession has progressed is that three of the topics in this section—self-assessment, quality of life, and implantable technologies—did not even exist 50 years ago. The fact that hearing-impaired people could, and should, personally rate the communicative and social effects of their own hearing loss seems obvious to us now, but not so years ago. Now, on the other hand, self-assessment scales are a component in every "best practice" recommendation.

Insofar as quality of life is concerned, of course people years ago were aware that a hearing loss could affect it, but the idea that quality of life considerations could and should be formally assessed never seemed to arise. Now, as the profession finds it necessary to justify the expense of hearing aids and therapeutic procedures to third-party payers, the positive impact of our management efforts have to be quantitatively demonstrated. The administrators who manage the purse strings will not be satisfied with only our personal assurance that some procedure or device is helpful. They want to see the evidence before any financial outlay is approved.

Also included in this second section is a chapter on hearing aids, an area that is clearly a central component of any AR effort. We've come a long way since the original Carhart procedure for the comparative evaluation of hearing aids, abetted by the ubiquitous

question, "How does that sound?" As this chapter indicates, the vast improvements in technology that have occurred have been accompanied by concurrent developments in assessment techniques. In other words, it's not enough to point to some new and impressive technology as an indicator of progress; it is also necessary to corroborate its merits in behavioral terms. Not every technical advance is accompanied by listening improvements.

The third section constitutes the bulk of the book. In it, we see not only the traditional concepts of speechreading and auditory training upgraded and cloaked in modern dress, but also full coverage of the relevant psychosocial issues (e.g., counseling, stigma, the group process, consumer advocacy) and specific therapeutic techniques (e.g., music therapy, repair strategies). The inclusion of these areas is another reminder of how our approach to AR has changed since the early days. The chapter on assistive listening technology reminds us how much communication can be enhanced by the direct transmission of a talker's voice to a hard of hearing listener. I know that whenever I use an assistive listening device, I am reminded anew of the great help that these systems can provide someone with a hearing loss—and how much they are underemployed by people with hearing loss.

A review of special issues in AR is provided for us in the last section. New information and insights have given rise to additional areas of professional responsibility. One of these is the manifestation, evaluation and management of people with central auditory processing (CAP) problems. The case is made that this is a rehabilitation issue that the profession of audiology must address. The evidence presented in this section will help lay the necessary evidential and conceptual groundwork for the involvement of audiologists in this area. Finally, lest we forget that human beings are our core concern, the rehabilitation of older adults is discussed in this section. We are an increasingly aging society, and older people present issues that may, and probably will, differ in some respect from those observed in younger people with hearing loss.

In brief, this book presents an impressive display of the concepts and content areas that now constitute AR. The people selected to write the various chapters are well known in their own countries and internationally. What they have presented is the current state of the art—a compilation of information, insights, practices and concepts that were unheard of when I was a patient, and even later when I started practicing as an audiologist. As a body of knowledge, audiologic rehabilitation has been a growing real-

ity. Still, in spite of all that has changed, we should remind ourselves what has not changed, and that is the impact of a hearing loss upon the life and well-being of the afflicted person. We are still going to see the same reactions from people that we saw years ago, from denial to isolation. And it is still going to take conscientious, caring, and competent clinicians to provide the services, so well documented in these pages, that these people need.

The challenge that now confronts the profession is to employ this vast body of knowledge for the benefit of adults with hearing loss. Knowing more does not mean we are doing more. Certainly knowledge is a prerequisite to action, which this book amply provides us, but somehow this knowledge has to find its way to people. There is still an inadequate public appreciation of the consequences of this "invisible" handicap. Impaired hearing is still more often a subject for so-called "humor" than for empathy and assistance. A public understanding of the potential consequences of a hearing loss—realizing that it is not a joke—is *the* prerequisite for hearing loss to receive the same kind of public support that other disabilities now receive via third-party payments. The kind of public support I envision goes beyond support for various kinds of devices and would include individual, group, and self-administered (possibly home-based) AR therapies. Support groups, too, like the Hearing Loss Association of America (HLAA) can play a significant role in the broader goal of helping people live with a hearing loss.

Ironically, it seems that the latest major development in hearing rehabilitation—cochlear implants—seems to be stimulating a modern resurgence of the traditional AR therapies. There is a recognition that new implant users require more than the device itself. While most of this recent interest seems focused on helping these people to adjust to the new and strange auditory sensations produced by a cochlear implant (i.e., auditory training), there also appears to be an increased appreciation of AR as a concept that potentially applies to all people with hearing loss. In my judgment, the fact that medical profession is now involved with implants, to an extent they never were with hearing aids, has provided additional impetus for follow-up AR therapy. A surgeon "prescribing" a course of therapy (probably conducted by the audiologist or speech-language pathologist) imbues the process with an authority that currently is lacking when a nonphysician makes the same recommendation. Like it or not, it is the reality.

There is one final comment I'd like to make about AR: It can be fun. Plus, it is an area for which

audiologists and speech-language pathologists bear the uncontested, primary professional responsibility. It affords these professionals an opportunity to interact with their clients on a more personal, human level. Now they can switch their focus from the hearing loss to the hearing problem, away from the audio-gram and to the human being with the hearing loss. It can be a very rewarding, and sometimes surprisingly enjoyable experience. I believe that professionals so involved will find that they now enjoy their work even more than they did before. So jump in . . . the water's fine.

—Mark Ross

Introduction: Goals and Topics

Since the publication of the second edition of this text, the audiology landscape has shifted dramatically due to changes in legislation, technology, and practice patterns. Audiologists are now adapting to over-the-counter (OTC) and self-fitting hearing aids in the marketplace, increases in e-technologies, and growing evidence of the benefit of personalized health care. As a result, these changes became the motivation for this third edition.

It became apparent in October 2015, with the release of the report of the President's Council of Advisors on Science and Technology (PCAST, 2015), that a tide of change was coming due to the critical nature of their findings. The report focused on untreated hearing loss in older adults. It acknowledged that this is a substantial national problem in the United States and that hearing loss represents a threat for increased social isolation, dementia, and related problems. In their opinion, the cost and distribution models for hearing aids were barriers to access.

Following the PCAST report, the Food and Drug Administration (FDA) held a hearing (April 21, 2016) on streamlining good manufacturing practices (GMPs) for hearing aids. They were seeking expert input from professionals in hearing health care about self-diagnosis of hearing loss, designating a category for hearing aids for mild to moderate hearing loss, and implications of OTC products. Reports were provided by representatives from such organizations as the American Academy of Audiology, American Speech-Language-Hearing Association, Academy of Doctors of Audiology, American Academy of Otolaryngology/Head and Neck Surgery, International Hearing Society, Hearing Loss Association of America, and others. These sources emphasized that hearing instruments should be provided in a context of patient counseling and aural/audiologic rehabilitation (AR).

In June of the same year, the National Academy of Sciences, Engineering, and Medicine released a publication entitled "Hearing Health Care for Adults: Priorities for Improving Access and Affordability" (National Academy of Sciences, Engineering, and Medicine, 2016). Their recommendations included advocating improved insurance coverage for hearing aids and, most notably, Medicare coverage for AR, with reimbursement for these services to audiologists.

These reports and recommendations form the backdrop for the Over the Counter Hearing Aid Act of 2017 (as part of the FDA Reauthorization Act of 2017). The latter act defines an OTC product, specifies the intended users (adults over 18 years of age with mild-to-moderate hearing loss), and customization of devices. The law requires that the FDA begin the process of developing regulations for these products. At the time of this publication, specific guidelines for OTC hearing aids are not yet available.

So, what are the implications for audiologists? Some believe there is a risk that safe hearing aid dispensing may come with the loss of protections for the person with hearing loss who needs medical treatment and careful audiologic management. Some fear a disruption of dispensing practices and patterns with increased competition from various nonaudiologic sources. Many audiologists are concerned that potential hearing aid users will attempt to use an OTC device and, experiencing frustration or poor fit, will abandon pursuit of amplification. Yet others embrace the anticipated changes and see an opportunity to provide increased rehabilitative services. These trends force audiologists to consider our role in the provision of hearing health care and to recognize our importance in the delivery of rehabilitative services to manage the consequences of hearing loss. It is from the standpoint of the latter that we opted to develop the third edition of this textbook.

The seeds for the first edition were planted in 2003, when it was learned that Jerry Alpiner and Patti McCarthy were not intending to prepare a revised edition of their classic audiologic rehabilitation (AR) textbook, *Rehabilitative Audiology: Children and Adults*. The Alpiner, then subsequent Alpiner/McCarthy, textbook had been a staple of AR graduate education in audiology and speech-language pathology since the 1970s. Its absence would indeed create a void in the education of audiologists. Having become a doctoral-level profession with advanced curricula, audiology needs textbooks reflecting that complexity.

This book was designed to go beyond an introduction to AR and explore the breadth and depth of audiology. It is intended to present theory, supported by evidence, with practical applications for both the academician and clinician.

With this background in mind, we decided to tackle the creation of an advanced AR textbook with an international perspective. While Alpiner and McCarthy addressed both children and adults in their book, we felt that, given the changing milieu with technological developments and demographic shifts in society, it was appropriate to focus the scope of this book solely on adults.

The third edition of this text is a reflection of the feedback we have received in the last 4 to 5 years about new areas of content that are important to doctoral students and audiologists in the field. It is in line with our commitment to promoting greater engagement by our field in rehabilitation, especially in light of the changing health care delivery system. Once again, we have organized the text in the following sections: (1) Developing a Knowledge Base: Introduction and Background; (2) Building the AR Plan; (3) The Rehabilitative Toolbox: Therapeutic Management; and (4) Expanding the Scope of AR: Special Issues.

Our concept of a fully functional doctoral-level audiologist required a sophisticated, in-depth background of information not sufficiently addressed in previous introductory textbooks. Therefore, we chose to include topic areas that are not only clinical but that also delve into the underlying issues surrounding hearing loss in adults. We need a long-term perspective to define the subject matter, as explained by Joe Montano, and have insight into its history, as fully described by McCarthy and Alpiner. Once again, we gathered together expert opinions and research-based formulations in chapters on such significant aspects of living with hearing loss as activity and participation, stigma, impact on quality of life, motivation for change and improving patient adherence, and interaction with communication partners. Crucial elements of service provision in AR are covered in chapters dedicated to clinical utility of self-assessment, counseling, self-efficacy, auditory and visual speech perception, auditory training, and auditory and cognitive processing. We welcome J.-P. Gagné, Mary Beth Jennings, Ken Southall, Harvey Abrams, Terri Chisolm, Anna Marie Jilla, Sue Ann Erdman, Kathy Cienkowski, John Greer Clark, Geoff Plant, Kathy Pichora-Fuller, and Sherri Smith with excellent chapters on these topics. We chose to include information on dimensions of service that are not as widespread in their distribution in the field, such as communication partner therapy, group processes, tinnitus management, and vocational considerations. These are represented by chapters by Jill Preminger, Laura Galloway, Chris Lind, Craig Newman, Sharon Sandridge, Sophia Kramer, and Theo Goverts. The influence of technology is seen in chapters relating to hearing assistive technology systems and assessment for implantable devices. Linda Thibodeau, Jaclyn Spitzer, Dean Mancuso, and Rachel Scheperle have provided insights on these areas. We believe that our field is in critical need of research and literature support of AR practices and efficacy, and we have included expert guidance on evidence-based practice as provided by Louise Hickson and Barbra Timmer.

We welcome new chapters and new authors to this third edition that include hearing health-seeking behaviors by Gaby Saunders, social factors in hearing aids by Gurjit Singh and Stef Launer, online multimedia educational services by Mel Ferguson, family-centered care by Nerina Scarinci, use of patient narratives by Abbey Berg and Emilie Zaslow, auditory and visual speech perception by Nancy Tye-Murray, and e-health by Alessia Paglialonga.

An underlying concept of this text is that AR is an expanding aspect of our discipline. Changes are taking place not only in our credentials and in our knowledge base, but also in our scope of practice as we define it. The scope of rehabilitative services is inclusive rather than exclusive. The role of technology in the current practice of AR is apparent, but, as we see in our text, it should be only the means, rather than the end, to the larger picture of rehabilitative planning for individual patients. Learning about and applying technology is intriguing and seductive, and we must always be aware of the potential for mistaking recommendations for devices as an endpoint in formulating plans. As we remain sensitive to this sometime temptation, the reader will note what a powerful emphasis there is throughout this text on the information necessary to develop excellence in counseling and developing a client-centered approach to AR.

The topics we chose to include in this text are ones we believed would represent the current state of AR and perhaps shape its future. Limits in a book's length, time constraints, and author availability precluded the inclusion of some topics that we nonetheless recognize as important. In particular, balance and vestibular rehabilitation was not addressed, and we believe it is a topic of importance for the future. In addition, this is one of those areas where our scope

of practice is currently not clear, with other professionals involved in the day-to-day management of the dizzy patient. We also chose not to include material on specific devices, such as hearing aids and cochlear implants, as we believed that entire texts have been devoted to these topics, and that the concepts and methodologies we explore are the true focus of AR.

Audiologic rehabilitative services are the foundation of our profession. We could debate how this priority is reflected in many audiologic practices, but it is not one entity. It is not just a hearing test. It is not hearing aids or cochlear implants. It is an area whose importance does not appear to be recognized by the broad health care establishment. It is up to us to advance the provision of audiologic services by offering the best practices, as reflected in this textbook. We do not wish the fate of audiologic rehabilitative services—nor of our consumers—to be placed in the hands of others. This book should be a rallying cry to all practicing and student audiologists to define

ourselves and provide the highest possible quality of services to people with hearing loss and their families.

—Joseph J. Montano and Jaclyn B. Spitzer

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—Joseph J. Montano

My thanks to the many patients and colleagues who taught me and gave me insight from their experiences. I hope to continue to work for the improvement of persons with hearing loss.

—Jaclyn B. Spitzer

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2

DEFINING AUDIOLOGIC REHABILITATION

Joseph J. Montano

Should one query audiologists about the provision and definition of audiologic rehabilitation (AR), it would soon become apparent that perceptions vary greatly. Some may deny they provide AR services because their clinical function is purely diagnostic, while others may believe that everything they do as an audiologist is rehabilitative, including the assessment of hearing. AR seems to have an ambiguous nature and, while most published definitions imply it is an inclusive process, most practitioners view it as exclusive: a specialty area distinctly different from diagnostic audiology. It is not uncommon to hear audiologists say they do not provide AR services, even when they dispense amplification and hearing assistive technology systems (HATS). As a result, AR is often thought of as being restricted to the clinical provision of services such as auditory training and speechreading. While these procedures are certainly components of the AR process, they do not define it.

These are changing times in the audiology profession. As service delivery models change, many audiologists are seeking new identities. Procedures once thought of as staples to practice are being encroached upon by various entities. If ever there was a time when AR needs to be defined and practiced, it is now. Since the publication of the previous edition of this text, technological developments in amplification such as products like hearables, wearables, self-fitting hearing aids and, most notably, over-the-counter hearing aids (OTCs) have begun to flourish. Perhaps, then, it is time for audiologists to return to their roots

and make AR not a specialized service, but rather a standard of practice.

The origin of the field of audiology is largely believed to be a direct outcome of the services provided to military personnel suffering from noise-induced hearing loss during World War II (Alpiner & McCarthy, 2014; Bergman, 2002; Ross, 1997). The programs that developed were rich in AR services that included hearing aids, counseling, auditory training, and speechreading. For a number of reasons, as the profession evolved, emphasis shifted from rehabilitation to diagnostics. AR seemed to have gotten lost in the excitement of new technological developments such as auditory brain stem response (ABR) and otoacoustic emissions (OAEs). Even in academic programs, AR classes were usually limited to one, or perhaps two, and seemed to focus primarily on speechreading and auditory training (Ross, 1997). Although AR diminished in popularity, acknowledgment of its importance remained. The provision of AR services, in fact, is one of the most relevant characteristics that distinguish the practice of audiologists from hearing aid specialists in the amplification arena. Ross goes on to state, "When it becomes necessary for us to justify our existence as a unique profession to various health, education and governmental agencies, we never fail to claim this activity [AR] as our own" (1997, p. 14).

Ross' words could not have been truer when, in the spring of 2016, in response the President's Council of Advisors on Science and Technology's report on

age-related hearing loss (PCAST, 2015), the Food and Drug Administration (FDA) held a series of meetings on streamlining regulations for good manufacturing practices for hearing aids (FDA, 2016). Representatives from various professional and consumer organizations such as American Speech-Language-Hearing Association (ASHA), American Academy of Audiology (AAA), American Academy of Otolaryngology—Head and Neck Surgery (AAO-HNS), and Hearing Loss Association of American (HLAA) presented their opinions on OTC hearing aids and included statements stressing the importance of AR in the hearing aid attainment process. There seemed to be no disagreement as to the importance of rehabilitative efforts in the management of hearing loss. The challenge for all of us, then, is to increase the inclusion of AR in audiology practice.

Many practitioners still believe AR to be the roots of our field and thus have pursued research and practice in this area. Alpiner and McCarthy (2014; also see Chapter 1 in this edition) discuss the evolution of AR in the field of audiology. As we study the history of AR from its origins through the establishment of professional organizations such as the Academy of Rehabilitative Audiology (ARA), ASHA and the latter's Aural Rehabilitation and its Instrumentation Special Interest Group (SIG 7), and the evolution of professional organizations like the AAA and the Academy of Doctors of Audiology (ADA), we are able to understand better the development of the definitions that provide important clinical direction.

Perhaps reviewing the existing definitions of AR can shed some light on the process and attempt to unify the perceptions of audiologists. With this in mind, the purpose of this chapter is to explore the variety of definitions of AR and identify barriers to the provision of AR services.

Who Provides Services in AR?

Many consider AR to be the true marriage of audiology and speech-language pathology, particularly with respect to service delivery for children with hearing loss. Membership in both ARA and ASHA SIG 7 consists of both audiologists and speech-language pathologists (SLPs), with many holding degrees and certification in both professions. Given the nature of AR, the roles of SLPs and audiologists can be complementary and cooperative (ASHA, 2001). This overlap, however, may have contributed to confusion and misunderstanding among many audiologists. AR

falls within the scope of practice of both professional groups (ASHA, 2018) and although knowledge and skills may have been delineated (ASHA, 2001), third-party reimbursement for service provision in AR is distinctly different. Audiologists are rarely, if ever, reimbursed for providing these services. In fact, it is often cited as the reason audiologists do not provide AR. Within the realm of third-party reimbursement, many AR services are covered only when performed by SLPs because this field of practice is classified as both diagnostic and rehabilitative while audiology is considered an exclusively diagnostic profession through the Centers for Medicare and Medicaid Services (CMS) (https://www.cms.gov).

Strides have been made to improve the reimbursement of AR services for audiologists, and as a result, the current procedural terminology (CPT) codes were established in 2006. Kander and White (2006) described the following codes: 92626: evaluation of auditory rehabilitation status, first hour; 92627: each additional 15 minutes, on same day as 92626; 92630: auditory rehabilitation of children; and 92633: auditory rehabilitation of adults. The codes developed for adults are more specifically aimed at adult cochlear implant recipients.

Reimbursement for audiology services provided under Medicare is limited to diagnostic services only, with limited coverage for treatment. Procedures for auditory training and speechreading are still not covered under Medicare for audiologists, even though the SLP can apply for reimbursement for these services by using the treatment code of 92507. Efforts are continuing to expand Medicare coverage for audiology services that would include the provision of AR and are included as part of the current ASHA Public Policy Agenda (ASHA, 2019a).

Not only is there confusion about who provides AR services, but basic nomenclature is also at issue. What should this process be called? Alpiner and McCarthy (2014) discuss the terminology paradox that is currently present in our field. The terms *aural rehabilitation*, *audiologic rehabilitation* and, most recently, *auditory rehabilitation*, are often used interchangeably. SLPs prefer to use the term *aural rehabilitation*, while audiologists have more consistently referred to these services as *audiologic rehabilitation*. One need only refer to the ASHA Preferred Practice Patterns (PPP) for the Professions of Speech-Language Pathology (ASHA, 2004) and Audiology (ASHA, 2006) to illustrate the difference. PPPs for speech-language pathology refer to services provided to individuals with hearing loss as aural rehabilitation; meanwhile, the audiology PPPs use the term *audiologic rehabili-*

tation. It is for this reason that the acronym AR was employed in the ASHA(2001) knowledge and skills publication on aural/audiologic rehabilitation. Currently, within the ASHA Practice Portal (2019b), adult aural rehabilitation is identified as an area of practice for both audiologists and SLPs with practice delineations provided.

What Is AR?

This question leads to a discussion of defining AR. A review of the literature reveals an abundance of definitions that seem to vary significantly historically. Gagné and Jennings (2009) reported that, while some definitions stress the activities associated with the rehabilitation of hearing loss, others focus on the reduction of associated disabilities and handicaps. The emphasis of AR has shifted from procedure-specific to a more patient-centered concept. Schow et al. (1993) reported on a trend of decreasing traditional treatments in AR (auditory training and speechreading), but an increasing perception by audiologists that their clinical duties included both diagnostic and rehabilitative services. Prendergast and Kelley (2002) postulated that this change was primarily due to a shift from traditional procedural AR approaches toward services designed to address emotional and social aspects of hearing loss. This belief can be substantiated when we compare the definitions used to describe AR throughout the years.

In 1971, Sanders published the first edition of his seminal book, *Aural Rehabilitation*. This text, along with subsequent editions, introduced a generation of audiologists to AR. The common thread throughout the chapters of this book was the importance of an individual's overall communication ability. He reported that approaching assessment from a theoretical framework that encouraged rehabilitation was just as critical for individuals with mild to moderate hearing loss as it was for those with severe to profound loss. This was a change in thinking at the time since the lion's share of AR services were offered only to those with more severe hearing impairments. Assessing individual areas of strengths and weaknesses would help identify abilities that were in need of improvement, making it possible to "circumvent the weaknesses through the development of the use of compensatory channels" (Sanders, 1971, p. 5). Included in this text were chapters dedicated to various topic areas: auditory and visual perception, amplification and hearing aids, auditory training,

visual communication training, and the integration of vision and audition. Sanders stressed the importance of not limiting our services to just the assessment of hearing.

ASHA (1984) published a position statement that discussed the definition of, and competencies for, aural rehabilitation. Developed by the Committee on Rehabilitative Audiology, the paper revisited the American Speech-Language-Hearing Association's 1974 legislative council resolution that supported the audiologist as the primary provider of AR services and their role in the supervision of such services. It was felt that in practice, however, the SLP was providing a significant proportion of AR services for individuals with hearing loss. As a result, the committee created a new definition of AR and included the components necessary for service provision: "Aural rehabilitation refers to services and procedures for facilitating adequate receptive and expressive communication in individuals with hearing impairment" (ASHA, 1984, p. 23). The authors went on to describe the elements necessary to accomplish the goals of AR. These included evaluation of sensory capabilities, fitting of auditory and sensory aids, counseling, and referral. The importance of counseling both the individual and family regarding the impact of hearing loss began to become a prominent message in the definition of AR.

While this position statement acknowledged the interdisciplinary nature of AR, it did nothing to help delineate the difference between the audiologists and SLPs in service delivery. In fact, it appeared that one of its purposes was to negate the audiologists' primary role in AR that had been established earlier in 1974. Although perhaps unintentional, the use of the terms *expressive* and *receptive communication* within the core context of the definition, while certainly accurate, may have created the appearance that AR is more directly associated with speech-language pathology. The terminology, while not exclusive to speech and language, is often associated with child language development or adult neurologic language processes. The paper appeared at a time when audiologists were seeking a more independent professional identity and was probably indirectly responsible for the increased popularity of the label *audiologic rehabilitation*.

Not long after the publication of this position paper, the creation of Special Interest Divisions of the ASHA (now referred to as Special Interest Groups or SIGs) became a reality. These divisions were established to meet member needs for specialized areas of professional practice. Division 7 (Aural Rehabilitation and its Instrumentation) was among the first

groups developed. The Steering Committee of Special Interest Division 7 (1992) contributed an article to the ASHA magazine that focused attention on some of the beliefs of their Division and stated simply that "Audiologic rehabilitation was Audiology" (p. 18). The implication, of course, was that the entire field of audiology was designed to be rehabilitative in nature. Their definition includes the importance of the impact of hearing loss on function within the context of the family and environment. These concepts would soon become primary objectives for AR.

Erdman (1993, 2000) stated that the "ultimate goal of rehabilitative audiology is to facilitate adjustment to the auditory and non-auditory consequences of hearing impairment" (p. 374). This brief description of AR begins to show the shifting emphasis in rehabilitation models from procedure-specific definitions to more function-driven descriptors. Here, the author places equal value on the auditory (e.g., hearing loss degree and nature, speech perception, etc.) and non-auditory (e.g., emotional, psychosocial, vocational, etc.) implications associated with the loss of hearing ability and goes on to discuss the importance of counseling in the rehabilitation process. In fact, Erdman (2000) remarks that counseling is the "essence of successful rehabilitation" (p. 435) of AR.

It became important that our profession begin to expand its definition of AR beyond the evaluation and management of hearing loss to include the impact of psychosocial functioning (Ross, 1997). The increase in popularity of self-assessment measurement tools, such as the Hearing Handicap Inventory for the Elderly (HHIE) (Ventry & Weinstein, 1982), the Hearing Performance Inventory (Giolas et al., 1979), and the Communication Profile for the Hearing Impaired (CPHI) (Demorest & Erdman, 1987), provided the audiologist with an arsenal that could be used to quantify the impact of adult hearing loss. The measures could yield a basic classification function; for example, the HHIE could be used to determine a level of hearing handicap or, more broadly, the CPHI could be used to provide a profile that is an effective counseling tool. Regardless of measurement focus, the direction of assessment for AR was tending to shift more toward the implications of a loss of hearing on numerous domains of function.

Ross (1997) reported that the process of AR includes "any device, procedure, information, interaction, or therapy which lessens the communicative and psychosocial consequences of a hearing loss" (p. 19). Like Erdman (1993), Ross seems to place equal emphasis on issues related to the auditory and psychosocial aspects of functioning. Without specifying further, he relegates any procedure appropriate to lessening the impact of hearing loss on communication function to AR. Certainly, one could include traditional activities such as speechreading and auditory training as treatment components, but one could just as easily consider counseling, vocational assessment, and family intervention.

Gagné (1998) continued to emphasize function over procedure when he defined AR as the process designed to "eliminate or reduce the situations of handicap experienced by individuals who have a hearing impairment and by persons with normal hearing who interact with those individuals" (p. 70). The author was quite specific about the inclusion of others within the communication environment of the individual with hearing impairment, an approach that can be directly related to a landmark publication under development at the time by the World Health Organization (WHO).

The World Health Organization and Its Impact on the Definition of AR

In 1980, the WHO published its first classification of disability with the International Classification of Impairment, Disability, and Handicap (ICIDH). It attempted to unify related terminology in the realm of handicap and disability. This original paper identified "impairment" as having an impact on the organ level and "disability" as related to activities and handicap referring to one's role in society. During the late 1990s, WHO began to revisit this classification system and subsequently published the International Classification of Functioning, Disability, and Health, commonly referred to as the ICF, in 2001. The impact of the WHO classifications is covered in depth in Chapter 3 of this text.

The ICF described both health and health-related domains in relationship to the body, the individual, and to society at large. The primary areas of concern within the ICF are body functions and structures and what is referred to as activities and participations. The ICF describes "what a person with a disease or disorder does do or can do." While the ICIDH seemed to highlight the negative consequences of impairment, the ICF emphasizes the positive (Boothroyd, 2007).

The influence of the WHO ICF can be directly observed in a publication prepared by the ASHA Working Group on Audiologic Rehabilitation (ASHA, 2001). This group was charged with the task of updating the ASHA 's 1984 position statement (discussed earlier) on the definition of, and competencies for, AR.

The interdisciplinary nature of AR was evident in the group membership, which consisted of both audiologists and SLPs. Unlike the 1984 document, this group decided to directly address the issues related to the provision of services by two distinct professions and, essentially, created two documents within one.

The format of the 2001 publication consists of an introduction that defined AR and provided background and history. The specific areas of basic knowledge and specific knowledge and skills are divided into two sections: (a) knowledge and skills for audiologists providing AR services, and (b) AR knowledge and skills for SLPs. The paper specifically delineates the roles of the two professions; while collaborative, these roles are distinctly different.

The authors emphasize that AR no longer refers to simply procedure-specific treatments such as auditory training, speechreading, or even hearing aid dispensing, but rather, it is a broad process with tentacles reaching into all aspects of a person's functioning. With this in mind, the working group proposed a definition of AR: "Audiologic/aural rehabilitation (AR) is an ecological, interactive process that facilitates one's ability to minimize or prevent the limitations and restrictions that auditory dysfunctions can impose on well-being and communication, including interpersonal, psychosocial, educational, and vocational functioning" (p. 2).

The WHO ICF (2001) terminology includes descriptors such as activity and activity limitations, and participation and participation restrictions. In addition, this publication stresses the importance of contextual factors, such as environmental and personal influences, on an individual's ability to function with an impairment. Inclusion of such terms as *ecological*, *interactive*, *minimize or prevent limitations* (activity), and *restrictions* (participation) reinforce the impact of the ICF on this ASHA (2001) document.

The knowledge and skills for audiologists providing AR services addressed by ASHA (2001) include areas of general knowledge, such as psychology, human growth and development, cultural and linguistic diversity, and quantitative research methodologies. Within the area of basic communication processes, those recognized are knowledge of anatomy, physiology, speech and hearing sciences, linguistics, psycholinguistics, and dynamics of interpersonal skills.

Table 2–1 includes the special areas of knowledge and skills identified in the ASHA (2001). The skills described are meant to educate the audiologist on the specific areas one should develop to practice AR. As is evident through a review of this table, the list is quite inclusive and does not distinguish between services for children and adults. A similar presentation of information was developed for SLPs, but will not be covered in the context of this chapter.

Building on this definition, the ASHA (2006) referred to AR in its preferred practice patterns for audiology as

> a facilitative process that provides intervention to address the impairments, activity limitations, participation restrictions and possible environmental and personal factors that may affect the communication, functional health and well-being of persons with hearing impairment by others who participate with them in those activities. (Section 15, p. 40)

Boothroyd (2007) advocated a holistic approach to AR. He defined this as "the reduction of hearing loss-induced deficits of function, activity, participation and quality of life through a combination of sensory management, instruction and perceptual training and counseling" (p. 63). The WHO ICF is acknowledged as a major influence on the purpose of his paper. As was evident in the ASHA (2001) definition, specific terminology (e.g., function, activity, participation) directly aligns Boothroyd's philosophy with the trend in the profession to an expanded view of AR: a shift from primarily procedural activities to the therapeutic process aimed at reducing the impact of hearing loss on function (ASHA, 2001; Erdman, 1993; Gagné, 1998; Ross, 1997).

A New Definition of Audiologic Rehabilitation

As we continue to expand the scope of services we include in the process of AR, our definitions will need to be reviewed and revised to allow for changes occurring in our professional practices. The following, which appeared in the second edition of this text, is what is believed to represent the current state of AR: "AR is a person-centered approach to assessment and management of hearing loss that encourages the creation of a therapeutic environment conducive to a shared decision process, which is necessary to explore and reduce the impact of hearing loss on communication, activities, and participations" (Montano, 2014, p. 27). As we review trends in audiology practice, there is a growing body of evidence to expand the concept of person-centered care to family-centered care. The inclusion of family in the rehabilitation process has been shown to improve

Table 2–1. Special Areas of Knowledge and Skills for Audiologists Providing Audiologic Rehabilitation (AR) Services

Knowledge	Skills
Auditory System Function and Disorders	Identify and describe disorders of auditory function
Developmental Status, Cognition, and Sensory Perception	Assess client's preferred mode of communication; verify visual acuity; identify need for assessment of cognitive skills, sensory perception, developmental delays, academic achievement and literacy; determine need for referral
Audiologic Assessment Procedures	Case history; otoscopic exam; conduct/interpret behavioral, physiologic or electrophysiologic evaluations; administer self-report measures; conduct and assess for APD;[1] identify need for referral
Speech-Language Assessment Procedures	Identify need for and perform screenings; describe effects of hearing loss on speech and language development; provide appropriate measures of speech, language and voice production; administer and interpret measurements of communication skills in auditory, visual, auditory-visual, and tactile modalities
Evaluation and Management of Devices and Technologies	Electroacoustic characteristic of devices and technologies; describe, perform, and interpret behavioral/psychophysical aided measures; conduct appropriate fittings; monitor fittings; perform routine visual; troubleshoot common causes of device malfunctioning; describe effects of devices on communication and psychosocial functioning; plan and implement program of orientation; conduct routine assessment of adjustment to and effective use of amplification; monitor outcomes
Effects of Hearing Impairment on Functional Communication	Identify and evaluate situational expressive and receptive communication needs; identify environmental factors that affect communication performance; identify the effect of interpersonal relations on communication function
Effects of Hearing Impairment on Psychosocial, Educational, and Occupational Functioning	Describe/evaluate impact of hearing loss on psychosocial development and functioning; describe systems and methods of educational programming; describe/evaluate impact of loss on vocational status; identify effects of hearing problems on the marital dyad and family dynamics; identify need for and provide for counseling in relation to hearing impairment and communication difficulties; provide assessment of family members' perception of and reactions to communication difficulties
AR Case Management	Use effective interpersonal communication in interviewing and interacting with clients and family; describe client-centered, behavioral, cognitive, and integrative theories and methods of counseling and their relevance in AR; provide appropriate individual and group adjustment counseling; provide auditory, visual, and auditory-visual communication training; provide training in communication strategies; provide appropriate expressive communication training; provide appropriate technological intervention; provide appropriate intervention for management of vestibular disorders; develop and implement an intervention plan; develop and implement a system for measuring and monitoring outcomes
Interdisciplinary Collaboration and Public Advocacy	Collaborate effectively as part of multidisciplinary teams; plan and implement in-service and public information programs; plan and implement parent education programs; advocate implementation of public law in educational, occupational, and public settings; make appropriate referrals to consumer-based organizations
Hearing Conservation/ Acoustic Environments	Plan and implement programs for prevention of hearing impairment; identify need for and provide appropriate hearing protection devices; monitor the effect of environmental conditions; measure and evaluate environmental acoustic conditions

[1]APD = Auditory Processing Disorder.
Source: Adapted from the American Speech-Language-Hearing Association (2001).

health-related and audiologic outcomes (Laplante-Lévesque et al., 2010; Meyer et al., 2014; Rathert et al., 2013; Singh & Launer, 2016). As a result, a slight modification to the Montano (2014) definition of AR would be the influence of family-centered care rather than limiting it to patient-centered care.

Montano (2011) emphasized the importance of relationship building in the AR process. He believed too much emphasis had been placed on technology and instrumentation, with the person actually living with hearing loss playing an almost secondary role. Figure 2–1 illustrates a technocentric model of audiology service delivery. This model focused attention on the hearing loss with the services provided revolving around the technology: the audiometer to assess the degree and nature of the loss, hearing aids to improve perception of sound and speech, hearing aid orientation to ensure the patient is able to successfully manage the hearing loss, real-ear verification, and, finally, technological accessories such as streamers and HATS to increase communication. This model appeared to concern itself more with the results appearing on the audiogram than the impact of those results on patient function.

A patient-centered approach to treatment is illustrated in Figure 2–2. This model had counseling at its core and emphasized a cooperative patient relationship in the services provided. Montano (2012) acknowledged the contributions of technology even in this AR approach, but believed they should be considered tools to assist in the patient's ability to adjust to hearing loss rather than the sole purpose of the professional interaction. The figure highlights areas of assessment such as the patient history, recommending it be performed as a narrative rather than a group of closed-set intake questions. The patient narrative is an effective way to establish a rapport with patients and is a major component of patient-centered treatment (Erdman, 2014; Gagné & Jennings, 2011).

The model continues to highlight more interactive treatment processes, including the use of self-assessment, discussion of communication strategies,
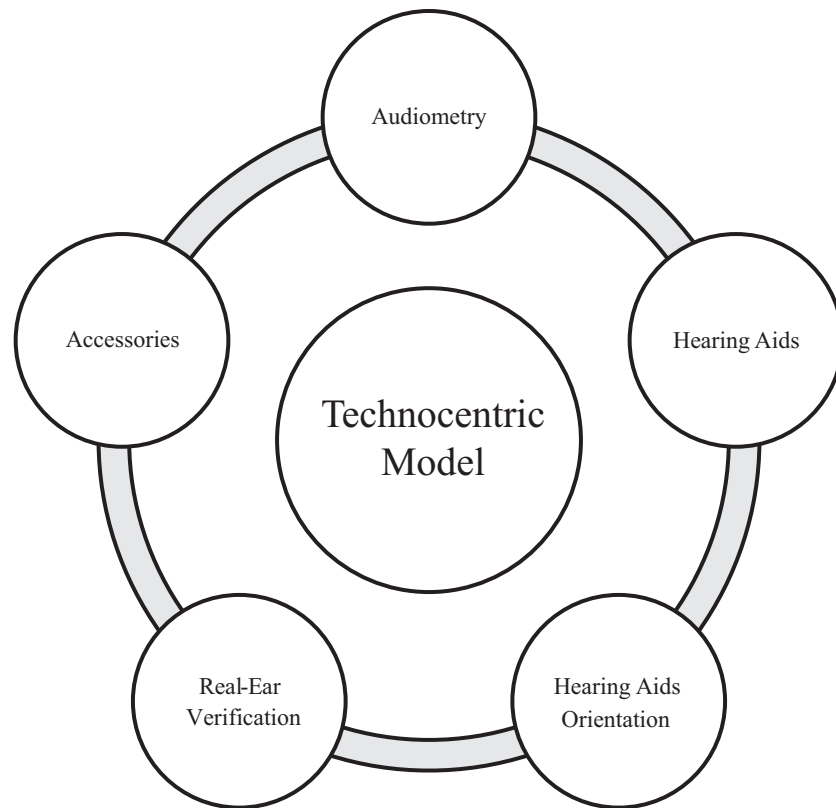
Figure 2–1. The technocentric model of audiology practice. *Source:* Montano, J. J. (2011). Adapted from "Building relationships: An important component to the aural rehabilitation process." *ENT and Audiology*, *20*(4), 91–92.
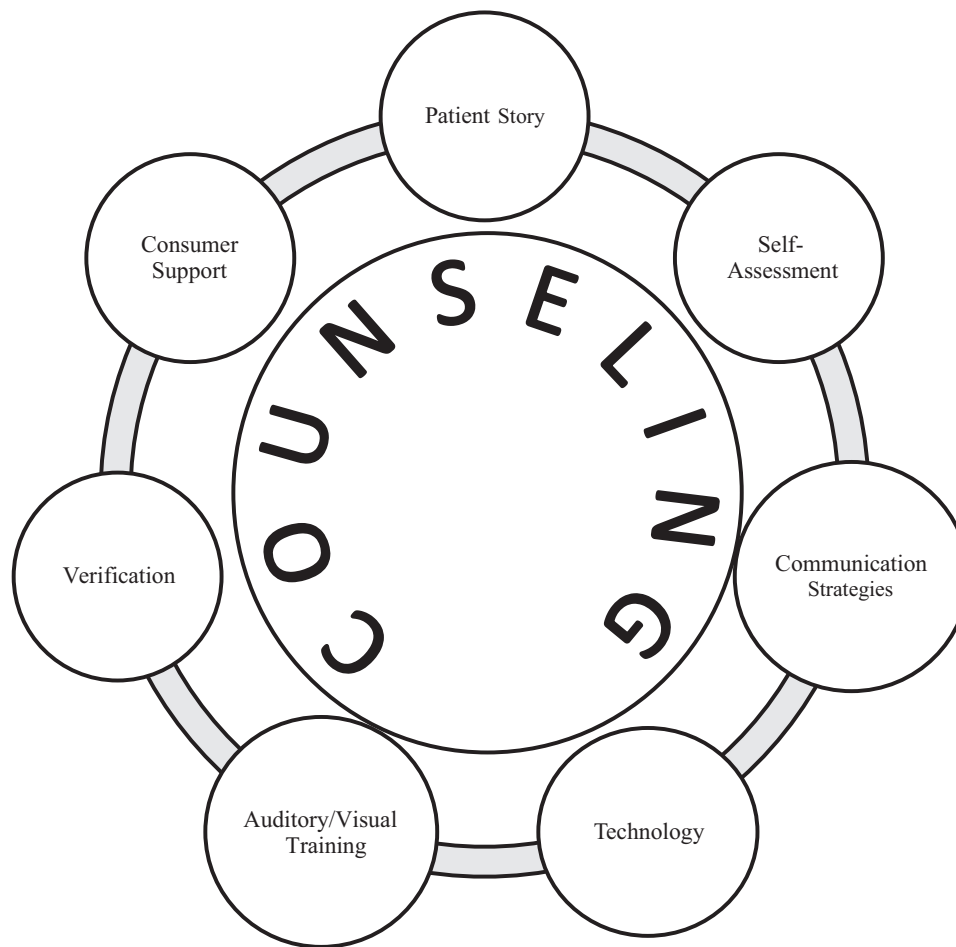
Figure 2–2. The person-centered model of audiology practice. *Source:* Montano, J. J. (2011). Adapted from "Building relationships: An important component to the aural rehabilitation process." *ENT and Audiology*, *20*(4), 91–92.

auditory-visual communication, and consumer support. Although emphasizing person-to-person interaction, it does not diminish the importance of amplification technology and verification of hearing aid performance.

Where and When Is AR Found?

AR programs have traditionally been found in settings such as university programs and Department of Veterans Affairs medical centers that not only provide clinical services, but have also been responsible for much of the published research in this area. Even though AR has been shown to be cost-effective (Abrams et al., 2002) and is identified as a desired ser-

vice to consumers (Pope & Stika, 2009), its availability in most practice settings is limited.

AR can, however, be effectively implemented in a variety of audiology employment sectors with the use of some creative programming and clinical intuition. Madell and Montano (2000) discussed the inclusion of AR services in a variety of work settings and provided suggestions for program development. In particular, these authors encouraged the provision of AR in locations like private practice and small clinical settings, hospitals, and long-term care facilities. Jessen (2019) developed a 5 Keys AR program, which she has marketed to audiologists, encouraging the use of AR strategies within private practice settings.

Warner-Czyz (2000) provided suggestions for program designs for group AR that can be successfully implemented in hospitals, small facilities, and

private practice offices. She postulated that the lack of AR services in these settings is primarily due to constraints such as time and financial concerns, lack of interest among consumers, and lack of information and confidence in the provision of services by audiologists. The Group Rehabilitation Online Utility Pack (GROUP) developed through the Ida Institute (2012) provides audiologists with an interactive resource for developing and implementing group AR programs in their practices. (*Editor's note:* For more information on GROUP and group AR, the reader is referred to Chapter 18.)

Jennings and Head (1994) discussed an ecological approach to service provision for long-term care. In their model, the audiologist serves a multipurpose role, and programming includes the individual, along with the family, staff, and the environment. Montano (2001) encouraged the use of creative in-service programming as a means to educate staff that work closely with nursing home residents with hearing loss. In such locations, it is unusual for staffing to include a full-time audiologist. Commonly, an audiologist is only available on either a part-time or consultation basis, if at all. It is therefore necessary to recruit into the process the existing staff who work with these clients on a day-to-day basis. This can be done in training sessions that take place with small hands-on groups working directly with the client, rather than in the classroom. Management of hearing aids, troubleshooting techniques, and application of communication strategies are all important topics for staff training. In addition, Montano (2001) encouraged discussion of the psychosocial impact that hearing loss may have on the residents in a nursing home. The use of hearing loss simulation software, such as Hearing Loss and Prosthesis Simulator HELPS (Sensimetrics, 2006), can provide a means for the caregiving staff to understand the potential issues their patients can face with hearing loss.

Specialized hearing and speech centers, such as the Center for Hearing and Communication (formerly the League for the Hard of Hearing), have long provided AR services for their communities. If it is not feasible to offer these services directly in one's practice, it becomes the responsibility of the audiologist to make the necessary and appropriate referrals for the service when available. Programs like the Gallaudet peer mentoring program (Bally & Bakke, 2007) have been created to train qualified consumers (i.e., individuals who are hard of hearing or deaf) as audiologist extenders in pertinent areas related to the management of hearing loss. With this knowl-

edge, audiologist extenders are capable of becoming an important resource for the audiologist and can be of assistance to others who are beginning to adjust to hearing loss. Many of the individuals who have begun to participate in this program are members of the HLAA. As a result, the trained persons can serve an additional purpose by educating individuals on the existence of self-help groups and can be a source of information on coping strategies for people with hearing loss. Barlow et al. (2007) reported that individuals with late onset of deafness reported mixed response to the services provided by health care providers, but were enthusiastic about and greatly valued the peer support and resources they gained from programs offered by other individuals who are deaf or hard of hearing. It is interesting to note, however, that the fact that such a peer mentoring program has been established suggests that it has become necessary to address an unmet need for consumers with hearing loss. This may be an example of the audiologist being constrained by schedules and lack of resources and the consumer needing to take up the slack.

Hospital settings can often prove to be a challenging environment for the establishment of AR programs (Tye-Murray et al., 1994). With the major focus on medical diagnostic audiology, therapeutic intervention for hearing loss is often unavailable. Given the interdisciplinary nature of the hospital environment, however, it could actually be an ideal setting for AR. Hospitals strive to provide state-of-the-art care for their patients and the availability of technologically advanced amplification and HATS can fit nicely into a modern outpatient facility. In addition, the use of HATS for inpatients with hearing loss provides an essential AR element to care. One resource that is particularly helpful, if establishing a hospital-based program, is the availability of referral personnel such as psychologists, social workers, and vocational rehabilitation specialists.

Even when AR services are not offered in a practice, it becomes our responsibility to make the appropriate referrals as necessary. This may mean sending patients to local SLPs who specialize in AR, universities, or even other practices where the services are offered. With a growing trend toward telepractice, AR may be available from distant locations, allowing patients to participate easily from their home or even within a practice setting. Current license restrictions prevent easy access to services in other states, but efforts are underway to ease licensure restrictions.

Regardless of the work environment, AR should and can be a part of any audiology practice. The

extent of services offered will, of course, depend largely on the work environment and the resources available. At any rate, when one attempts to identify a common thread that runs through the AR definitions previously discussed, counseling appears at the forefront. The counseling process is all-inclusive and begins the moment the audiologist first greets his patient in the waiting room. If one keeps in mind the need to help patients adjust to hearing loss and reduce the limitations and restrictions associated with it, then counseling should take a prominent position in one's practice.

How Can We Provide AR Services?

The ability to provide services in AR may be directly associated with the delivery model used in practice. Erdman et al. (1994) characterized the service delivery models used in audiology as either medical or rehabilitation models; more recently, Erdman (2014) conceptualized these models as biomedical or biopsychosocial. The medical/biomedical model is considered a top-down approach where the clinician provides the assessment and determines the audiologic diagnosis and treatment options. In this model, the clinician is characterized as doing something "to" the patient and makes the decisions necessary for proper rehabilitation. The client's role is passive and his/her actions are directed by the clinician. It assumes that it is the clinician who knows what is best for the client and is based on the premise that hearing loss is disease- or pathology-oriented. This model is most often associated with acute conditions.

The rehabilitation/biopsychosocial model of service delivery takes a more horizontal approach and is characterized as more interactive and facilitative. Here, the clinician helps identify problems and works with the client toward resolution. This model is most often considered when dealing with chronic conditions and assumes the client's needs and perceptions will influence treatment strategies. In this model, the client takes an active role in his/her rehabilitation and its focus shifts toward functional performance, including activities and participations.

Providing AR services in clinical practice frequently involves more than the identification of the problem and perhaps provision of amplification systems to improve auditory performance. Hearing loss often contains many layers in need of treatment. Providing a hearing aid may simply address one area of need (audibility), without satisfactorily dealing with

the imbedded problems associated with adjustment. In order to provide the necessary comprehensive remediation, multiple aspects of program provision may be necessary. Hearing aid delivery may fall short without the provision of hearing aid orientation. Communication strategies, speechreading, and auditory training may enhance communication performance. Access to peer support groups such as through the HLAA may add an important dimension to an AR program,

The effectiveness of many programs in AR has been evaluated and audiologists are now beginning to develop an arsenal of evidenced-based practice studies to justify their services. Reviews of practice areas such as counseling-based groups (Hawkins, 2005), amplification (Cox, 2005), individual auditory training (Sweetow & Palmer, 2005), and most recently, a summary of a variety of adult AR services (Hickson, 2009) are continuing to provide this important foundation. Evidence supporting the effectiveness of our services will help further the quest to find acknowledgment of the importance of AR by third-party payers. Wong and Hickson (2012) published an entire text dedicated to evidenced-based practice in audiology with emphasis on the intervention and treatment.

Implementation can be difficult in many of our work environments, but even in busy hospital clinics or private practice, creative solutions can be developed to provide AR for patients. Tye-Murray et al. (1994) provided a number of suggestions for AR program provision including home training, client libraries containing relevant reading materials and DVDs, and established assistive device centers where technology can be displayed and demonstrated.

Sweetow and Sabes (2007) identified AR as a growing area of interest among audiologists. Computer-based programs that can assist the audiologist in the provision of individualized auditory/auditory-visual training are also attracting attention, as illustrated by the popularity of a variety of programs: CasperSent (Boothroyd, 1987), an example of computer-assisted speech perception testing and training at the sentence level; CAST, a computer-aided speechreading training program (Pichora-Fuller & Benguerel, 1991); LACE, a tool for listening and communication enhancement (Sweetow & Sabes, 2006); Seeing and Hearing Speech, a lipreading software (Sensimetrics, 2008); and ReadMyQuips (Levitt et al., 2011). More recently, Tye-Murray (2016) introduced a computer-based AR program called clEAR (customized learning: Exercises for Aural Rehabilitation) that provides the user with a gamelike structure for auditory training. With the growing emphasis on family-