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Development of an Audiologic Rehabilitation Program Model for Adult Patients Receiving Care at a Graduate Training Facility

Amanda McFadden
amcfadd@ilstu.edu

Antony Joseph
Illinois State University, arjosep@ilstu.edu

Development of an Audiologic Rehabilitation Program Model for Adult Patients Receiving Care at a Graduate Training Facility

Capstone Document

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By

Amanda McFadden, B.A.

Illinois State University

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Approved by Capstone Advisor: Antony Joseph, Au.D., Ph.D., CCC-A, F-NAP

ABSTRACT

Research has shown that untreated hearing loss can negatively impact a person's quality of life. The average person with hearing loss waits seven years from the onset of symptoms to pursue hearing aids (Hall, 2014). To decrease the negative effects of hearing loss, hearing technology, by itself, is typically not enough support for even the best users (Kelly et al., 2013). To provide supplementary support for these patients, audiologic rehabilitation (AR) is required. Audiologic rehabilitation is the modern term used to classify treatments that were previously so-called "aural rehabilitation." Per Boothroyd (2007), aural [audiologic] rehabilitation may be defined as, the "reduction of hearing loss deficits of function, activity, participation and quality of life through a combination of sensory management, instruction, perceptual training, and counseling" (p. 63).

The Eckelmann-Taylor Speech and Hearing Clinic (ETSHC) at Illinois State University (ISU) currently offers an AR program referred to as the *Hearing Help Course* (HHC). The program is currently facilitated by a clinical supervisor and one or two Doctor of Audiology (AuD) graduate students. When this report was written, the Department of Communication Sciences and Disorders (CSD) required that all AuD graduate students take a course titled, "Advanced Audiologic Rehabilitation: Adult/Geriatric" (CSD 533), instructed by Dr. Antony Joseph. Information regarding best practices, person-centered care, and professional recommendations were obtained from the professor of CSD 533, the HHC coordinator, and the audiology clinical educators in the AuD program. As such, there appears to be an opportunity to improve clinical training that pertains to AR within ISU's AuD program.

At the time this report was finalized, there were 75 AuD programs across the United States. Five of these AuD programs were located within the State of Illinois, one of the most populous states. Some states do not have even one AuD program; however, Illinois is one of the states with multiple AuD programs. We contacted Illinois AuD programs to gather information about their required graduate AR coursework and related rehabilitation services being offered to patients.

The goal of our project was to enhance the patient experience by synthesizing material from didactic training (CSD 533), and observations from other relevant research, into the ETSHC HHC. Through this investigative process, a variety of best practices were discovered. As AR is often clinically underutilized, it was suspected that a select number of audiology clinics might not be offering direct services to patients. Furthermore, in the literature, suggested methodologies for hearing rehabilitation vary widely; thus, we hypothesized that survey responses from university audiologists in Illinois would differ extensively as well.

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VITA

Education

B.A., Speech and Hearing Science, 2014, University of Iowa

Minor, American Sign Language, 2014, University of Iowa

Au.D., Audiology, 2018 (expected), Illinois State University

Positions

Graduate Assistant, State of Illinois Early Childhood Hearing Outreach (ECHO) Initiative, 2014- 2017

Member, Student Academy of Audiology, Illinois State University, 2014-2015

Fundraising Committee Member, Student Academy of Audiology, Illinois State University, 2015-2016

Vice President, Student Academy of Audiology, Illinois State University, 2016-2017

Resident Audiologist, Coweta and Fayette Hearing Clinics, 2017-2018

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CHAPTER 1

Background

The Eckelmann-Taylor Speech and Hearing Clinic (ETSHC) at Illinois State University (ISU) currently offers Audiologic Rehabilitation (AR) services to eligible patients. This program is offered to augment the hearing aid appointment series during fitting and through a group support session. Within the community, the group AR session is referred to as the *Hearing Help Course* (HHC), where new hearing aid patients are encouraged to attend one, two-hour session with a family member or friend. This group course is included in the purchase price of hearing aids. The ETSHC offers a variety of services that are administered by graduate-student clinicians who have been paired with licensed audiologists and speech-language pathologists. The hearing aid series and group HHC sessions are delivered by Doctor of Audiology graduate students and their licensed clinical supervisors. The Communication Sciences and Disorders course (CSD 533), Advanced Audiologic Rehabilitation: Adult/Geriatric, is required as part of the ISU Doctor of Audiology graduate curriculum. Additionally, I was a facilitator of the HHC while enrolled in CSD 533. Attending these simultaneously permitted a direct comparison of the course and clinical work.

A significant obstacle our clinic faced, while delivering AR to patients, was poor patient attendance of the HHC; therefore, to optimize resources, only one HHC session was offered every eight weeks. We later determined that poor AR (HHC) course attendance may have been due to the characteristics of our eligible patient population. Individuals who were offered AR at ETSHC were generally elderly, traveling from a distance, and first-time hearing aid users. Patients made three to five trips to complete the entire hearing aid fitting process (diagnostic exam, hearing aid selection, hearing aid fitting, and hearing aid check), which is burdensome.

Literature Review

The population is aging steadily, and, by the year 2050, it is estimated that one in every five people will be 80 years old or older (Limongi et al., 2015). People this age show higher rates of sensorineural hearing impairment and other medical comorbidities than younger cohorts. Hearing loss is a communication disorder that may produce a variety of negative effects, most commonly impacting an individual's interpersonal communication. Its general effects can influence social, physical, functional and psychological health, resulting in a decrease in overall quality of life (Preminger & Nesbitt, 2014). Common problems caused by hearing loss include, denial, anger, social anxiety, and in more severe cases, hopelessness (Hall, 2014).

Communication may be disrupted due to hearing loss, which can negatively affect relationships, shared decision-making, and the personal autonomy of an individual (Kelly et al., 2013). Hearing loss has a range of severity levels, as well as varying degrees of its effects on functional communication. The severity of hearing loss may not be directly associated with its effects on one or more domains (e.g., psychological, social, emotional). More broadly, hearing loss can lead to withdrawal from social situations, and individuals with hearing loss may stop participating in activities that they once enjoyed. Limongi et al. (2015) reported that aging males have higher incidence of hearing loss, but aging females demonstrate a higher incidence dementia. For adult patients with hearing loss, hearing aids are often recommended and prescribed to improve communication performance and, therefore, overall quality of life. Although hearing aids are a common treatment option for sensorineural hearing loss, approximately one in every five individuals diagnosed with hearing loss decide to purchase hearing aids (Hall, 2014). The average person that purchases hearing aids usually will not seek

hearing amplification devices until up to seven years after a diagnosis of hearing loss. This may be because of the negative stigma and characterization of hearing aids.

One limitation of hearing aids is that they are unable to restore a patient's hearing back to normal, despite their ability to increase user access to sound (Hawkins, 2005). Even though hearing aid technology has improved significantly, hearing aid uptake has not increased the same way (Schow, 2001). This trend emphasizes the need for AR because hearing aids, when prescribed without support care, are likely to be used less frequently.

Audiologic rehabilitation has been utilized for decades to improve communication for individuals that have been diagnosed with hearing loss. Audiologic rehabilitation was first offered in the 1940's to aid military personnel who returned from combat with hearing loss. These service members showed difficulty understanding speech, so the need for AR was established (Sweetow & Sabes, 2007). Over time, the essence of AR has shifted. Historically, AR procedures were provided to patients on an individual basis, as it became the primary treatment alternative for hearing loss. By and large, AR mainly focused on improving a patient's ability to lip-read (speech-read). Patients with hearing loss were not previously provided with tools to manage and cope with hearing loss, as well as improve social interactions (Hawkins, 2005). Since those times, the primary treatment for hearing loss has transitioned from historical AR to, simply, prescription of hearing instruments (Sweetow & Sabes, 2007). The focus of AR has expanded to include counseling on the psychological aspects of hearing loss, and techniques for the patient that improve communication in a variety of settings (Hawkins, 2005). The method of delivering AR has shifted from individual to group-oriented sessions. A more recent definition of audiologic rehabilitation includes the provision of tools to reverse the negative effects of hearing loss through a combination of methods, "sensory management, instruction, perceptual

training, and counseling" (Boothroyd, 2007). Overall, the definitive goal of AR is to improve the overall quality of life of patients with hearing loss, utilizing various methodologies, not just speech-reading or hearing aids, although the effectiveness of some of these rehabilitation approaches has been questioned in the literature (Grenness et al., 2014).

Adult AR is administered at the Eckelmann-Taylor Speech and Hearing Clinic at Illinois State University. For every patient, AR begins with hearing aid selection and continues through the hearing aid follow-up appointment process. A self-assessment measure, most often the Client Oriented Scale of Improvement (COSI), is completed at the hearing aid selection appointment. At the end of each hearing aid fitting, the sensory management portion of audiologic rehabilitation is delivered. During this appointment, instruction is provided that covers topics such as, hearing aid components, insertion and removal of the device, and care and maintenance information. Group instruction is offered to patients with hearing loss and their frequent communication partners. This group program is known as the *Hearing Help Course* (HHC). The HHC is offered at no additional cost to the patient, as it is included in the hearing aid purchase package at the ETSHC. Each patient is invited to attend the ensuing scheduled course with a family member or friend.

Students in the AuD graduate program at Illinois State University take Communication Sciences and Disorders (CSD) course 533, *Advanced Audiologic Rehabilitation: Adult/Geriatric* (CSD 533) in their second or third year. This course is designed to introduce students to AR theory, practice, and methods of adapting individual and group care. Some graduate students complete CSD 533 before they are tasked as facilitators of the HHC; however, in some cases, students are assigned to their HHC rotation before completion of the CSD 533 course. The

results from this project will be used to integrate the didactic experience (CSD 533) and practical training (HHC) to optimize the students experience no matter which one is taken first.

To attain this goal, best practices will be compared with current protocols in AuD university clinics across the state. Interviews will be conducted with clinicians at Illinois State University, as well as the other four accredited AuD programs. Within the research literature, we discovered overlapping findings, principles, and observations of AR; but, overall, there is not a universal agreement on best practice for any component of the AR protocol. Due to a variety of suggested AR methods reported in the literature, we hypothesized a diversity, and possibly a disparity, of rehabilitation practices would be observed between the university clinics.

Due to multiple factors, many audiologists do not administer AR services beyond hearing aid selection and fitting (e.g., hearing aid information, use, care and maintenance, counseling). The underutilization of AR is exacerbated by factors such as clinician practical preparedness, confidence in AR methods, availability of clinic time, poor cost reimbursement, and lack of patient attendance. Our project aims to leverage the reviewed literature, and survey responses, in order to identify the best model for delivery of AR at a university clinic.

Communication Needs for Patients with Hearing Loss

Patients with hearing loss report increased communication difficulty in various listening conditions, such as competing noise, poor visibility of the speaker's face, and increased distance from speech source. Background noise decreases speech audibility and clarity. This negatively affects speech intelligibility for normal-hearing listeners, but can have an even greater effect on individuals with hearing loss (Tye-Murray, 2014). Although hearing aids increase access to sound, they are not a miracle treatment for hearing loss. For patients with sensorineural hearing

loss who use amplification, speech intelligibility often remains reduced when sound processing mechanisms of the inner ear hearing organ, specifically the cochlea, are impaired (Tye-Murray, 2014). Patients with hearing aids frequently report that they can identify when someone is speaking, but they are unable to recognize what is being said. Research has shown that to understand speech, more attention is required for patients with hearing loss. This requirement occupies higher-order resources that could be used for speech processing, including memory (Tye-Murray, 2014). It is also suggested that the increased attention required by those with hearing loss is related to a need to fill in the missing information due to a degraded listening environment and reduced speech audibility (Preminger & Nesbitt, 2014).

Need for Audiologic Rehabilitation

A gap exists between patient expectations and hearing aid experience and use. Patients should be counseled and prepared to earn improved communication skills over time, in various situations, after they have adjusted to amplification. This requires the application of AR, as it can be used to reduce the difference between a patient's expectations and reality. Overall, group AR has been reported to improve a patient's quality of life. Research has supported that group AR can decrease the effects of hearing loss related to the psychological, social and emotional aspects (Preminger & Nesbitt, 2014). So, AR can impact personal adjustment to hearing aids greater than sensory management offered alone.

Hearing aid patients indicate that they have not received enough instruction and support for the adjustment and use of hearing aids. According to Schow (2001), approximately half of the population with hearing loss that obtain hearing aids decrease or discontinue use of the instruments significantly a short time after fitting. In a study by Kelly and associates (2013),

51% of patients felt they had received an appropriate amount of practical information about hearing aid use prior to fitting. After being fit, that percentage increased to 64% (Kelly et al., 2013). Approximately 50% of the patients who participated in this study reported that they received sufficient practical help for hearing aid use after they were fit with hearing aids. According to Tye-Murray (2014), around 40-60% of hearing aid users are satisfied with the benefit they received from hearing aids. Patients were judged to be sufficiently satisfied with their hearing aids if they used the hearing instrument on a regular basis. Studies such as these reinforce a need for additional support services and training for patients with hearing loss. It is abundantly clear that hearing aids alone are not enough to address patient-reported communication issues.

Auditory training is an optional component of the AR program. The fundamental idea behind auditory training is related to brain plasticity. Since hearing loss causes changes in auditory areas of the brain, it results in damage to an individual's speech perception abilities. With auditory training, it is possible to improve affected auditory processing areas, which should result in better speech understanding. Per Tye-Murray (2014), patients who qualify under the following categories are eligible auditory-training candidates:

- recent change in hearing status,
- hearing aid user, and/or
- dissatisfied hearing aid user.

Underutilization of Audiologic Rehabilitation

There is a lack of universal practices in AR. Audiologic rehabilitation is often not administered in the clinical setting, despite the research-supported inadequacy of treating hearing

loss with technology alone. Some argue that AR begins during the initial encounter between the clinic and patient (Grenness, 2014; Joseph, 2015), while others suggest that AR starts after the patient has been diagnosed with hearing loss, when listening and communication strategies are conducted.

There are numerous reasons why AR is currently underutilized in the field of audiology, these include: lack of reimbursement and financial gains, clinic-time limitations, lack of quality AR training and competency in providers, as well as poor patient participation. If these problems were reversed, perhaps more audiologists would offer AR services to patients. According to Sweetow and Sabes (2007), audiologists have knowledge about AR and understand that patients would benefit from it; however, they do not know which procedures are time-efficient and cost-effective. More direction from clinical practice guidelines are desperately needed. Audiologic rehabilitation services performed by an audiologist are not currently reimbursed by Medicare, Medicaid, and private insurance companies, and must be paid personally by the patient. This may cause the patient to be less-inclined to attend AR sessions, to avoid clinic charges for rehabilitation services.

For the provider, the lack of reimbursement may incur a financial burden, as clinicians should earn revenue for the time they invest in patients. Hence, AR services may not allow the clinic to financially break even for allocated rehabilitation care. Another potential factor for underutilization of AR is time, for the clinician and the patient. While an audiologist is facilitating AR sessions, they are unable to see patients for other hearing and balance services that might produce (greater) revenue. This can be especially detrimental for busy clinics with very few audiologists.

An additional factor that may prevent clinics from offering AR services is the lack of quality training or competency to offer adequate rehabilitation. There are several articles available to audiologists that can be used to familiarize them with the principles of AR. By offering group, rather than individual AR sessions, clinics may reduce the financial and time-related obstacles that challenge the clinical implementation of AR. In spite of the problems associated with limited training and competency, the inclusion of experienced hearing-aid users may relieve a lesser-trained audiologist of driving the AR session. Experienced amplification users have encountered numerous communication challenges and merely need to be prompted to share them with the group. Critical AR information for use by audiologists will be presented in detail in the next segment of this report.

Recommended Adult Audiologic Rehabilitation Practices

Today, the focus of hearing loss treatment is on technological solutions rather than AR services. An important aspect of AR that involves more than hearing loss sensory management and hearing aid use is specified counseling. Incorporating counseling will allow the psycho-emotional aspect of hearing loss to be discussed with the patient. Preminger and Nesbitt (2014) recommended that psycho-emotional issues be addressed by discussing and practicing coping strategies during group AR sessions. This provides an opportunity for patients to share personal experiences related to hearing loss, such as strategies they have used to reverse communication problems.

Like other support groups, group AR can provide a space for patients with hearing loss to share common experiences. It allows them to learn that the issues they encounter are not unique, but rather mutual among those with hearing loss. Recommended group AR procedures include

practicing how to communicate effectively with others, so the approaches learned might be applied in their routine daily life. Studies have identified increased benefits after group AR when a communication partner accompanies the hearing-impaired patient. Unfortunately, this is not consistently emphasized by audiologists, despite the obvious value (Preminger & Nesbitt, 2014). If a communication partner attends a group session, strategies can be practiced in a manner that more closely resembles the patient's real-world social interactions.

Schow (2001) recommended a model for the assessment and management of hearing loss for audiologic rehabilitation referred to as CORE and CARE (see Appendix A). CORE stands for *communication status, overall participation variable, related personal factors, and environmental factors*. CARE is an acronym for *counseling*, *audibility and impairment management*, *remediation of communication activity, and environmental participation*. Today, hearing loss treatment is primarily focused on amplification, although the CARE model suggests an approach to AR that extends beyond just sensory management. An important piece of the CARE model (Schow, 2001) is having the patient establish their own goals for the treatment and rehabilitation process. This allows progress and effectiveness to be assessed. The counseling portion of the CARE model addresses the psychological aspects of hearing loss. This should be administered before, during, and after the hearing aid fitting process.

Regarding amplification fit and use, a system referred to as HIO-BASICS is recommended (Schow, 2001). The first item, *hearing expectations*, should be discussed, which includes preparing the patient to have realistic expectations about hearing aid use. It is important that patients understand that hearing aids are not perfect, and that they will not return users hearing back to normal. Audiologists should ensure that patients understand that some listening environments will be more challenging than others. New hearing aid users must be counseled

properly about the time required for the adjustment process and also be educated about having appropriate expectations.

The next HIO-BASICS item covers *instrument operation,* which includes the basic functions of hearing aids. Patients who wear hearing aids that fully cover the external auditory meatus may experience the *occlusion effect*. The patient should be informed that changes can be made to the features of the hearing aid to reduce this effect. Exhaustive *battery* information should be provided, such as battery size, life expectancy, battery replacement, how to re-supply, including the safety-toxicity warning.

An additional HIO-BASICS issue should be discussed with the patient is the possibility of experiencing *acoustic feedback*. Users should expect acoustic feedback if they place their hand or telephone close to the microphone. Nevertheless, it should not occur during talking or chewing. If acoustic feedback is reported, the patient should return to the clinic for follow-up and adjustments. *System troubleshooting* is a component of HIO-BASICS, wherein the patient should be informed of common issues experienced by hearing aid users regarding function. There is a hierarchy of common issues and solutions, that include checking:

- battery condensation and strength
- accumulation of cerumen or debris on end of receiver, and
- accumulation of debris on the instrument microphones

After troubleshooting, if the hearing aid issue is not resolved, a visit to the audiologist is warranted.

Patients should be taught how to properly *insert* and remove hearing aids while they are physically in the clinic. They should be informed of the importance of *consistent cleaning* and maintenance of the instruments. The final aspect of HIO-BASICS relates to *service* that may be

required throughout the life of the hearing aid, including where, and how often, to get the devices serviced or repaired.

The CARE model comprises the remediation of communication. Inclusive subjects have been given the acronym, CLEAR. The acronym represents *controlling the situation, lip reading, realistic expectations, assertiveness and repair strategies*, per Schow (2001). Strategies utilizing these recommendations include making the signal as audible as possible, and minimizing distractions or noise that interferes with understanding. It is important for the listener to be able to see speaker's face and mouth. Furthermore, the patient should have realistic expectations for communicating in different listening environments with hearing loss. Assertiveness and self-advocacy are also important aspects of the CLEAR method. This element can help others understand the difficulties that patients might experience during conversation. Communication problems are expected, so it is important to make the patient knowledgeable about communication repair strategies. Common repair strategies include repeating back the portion of the information that was understood, asking for the speaker to write down a word or the part of the sentence that was missed, or asking for more specific repetition, not simply just asking, "What?" or "Huh?" The CARE model also addresses environmental and participation issues. These concerns may be recorded and identified thorough self-report measures (e.g., Client-Oriented Scale of Improvement or Glasgow Hearing Aid Benefit Profile). It is suggested that environmental and participation issues be addressed by the following suggestions that can be remembered under the acronym of SPEECH:

- having the speaker's face *spotlighted* or well-visualized by person with hearing loss
- inserting a slight *pause* between phrases

- implementing clarification as needed which shows that the speaker has *empathy* for the person with hearing loss
- implementing preemptive communication strategies to *ease* the person's listening as much as possible
- *controlling* the listening environment for best possible communication conditions
- *having a plan*, as the person with hearing loss, for handling communication breakdowns in a complex listening environment.

The needs of both individuals and the group should be considered when deciding which concepts to cover in a group AR setting. The amount of hearing loss and its effects on the patient's psychological, social and emotional health will vary from patient to patient. General concepts (discussed previously) can be provided to patients for them to decide where they might need more information, guidance, or support. Using their responses, the audiologist can plan a session that meets the group's needs. It cannot be over-emphasized that the audiologist's, or support staff's, role in group audiologic rehabilitation is to facilitate the session, rather than to simply deliver instruction. Patients should dictate the session with only guidance from the clinician.

Current Clinical Model

Within the Eckelmann-Taylor Speech and Hearing Clinic at Illinois State University, audiologic rehabilitation starts at the hearing aid selection appointment in the appointment flow from audiologic evaluation to group AR (see Appendix B). The patient is counseled regarding realistic expectations for communicating with hearing loss and hearing aids. Additionally, a self-assessment, most often the Client Oriented Scale of Improvement (COSI), is discussed and

completed during the hearing aid selection appointment. At the hearing aid fitting, the patient is informed of hearing aid components, care and maintenance techniques, common communication strategies, and provided information about the group audiologic rehabilitation course (refer to Appendix C).

The current group audiologic rehabilitation course is offered in a group setting to provide patient-to-patient support. It is offered once each other month, and course length is 90 minutes. The course is facilitated by Doctor of Audiology graduate students, along with an audiologist clinical staff person. The course is offered to patients that have purchased hearing aids through the ETSHC. Although all patients that purchase new hearing aids are invited to attend the course, most often, only new hearing aid users attend.

The content of the ETSHC AR course is slightly varied based on the needs and goals of the patients in attendance. The model of the course is a mixture of a Microsoft PowerPoint® presentation, written worksheets, guided practice, and group discussion. An important part of the introduction section of the course is discussing guidelines for the group session that encourage patients to feel comfortable sharing their personal experiences about communication difficulties, use of hearing aids, and assistive listening devices. Topics covered throughout the course include, visual aspects of communication, self-advocacy, communication strategies, and resources available to improve quality of life. A worksheet is provided to have patients reflect on situations where they have experience communication difficulty. Additionally, the worksheet requires the patients to identify factors that negatively impacted the communication setting. The experiences are then discussed among the group. At times, hearing aid components and care/maintenance topics are covered during the group course.

CHAPTER 2

Methodology

Participants

To obtain a clearer understanding of the perspectives of the university clinicians in our state, they were invited to share their responses through a telephone interview using an internally-developed set of questions. Participants were clinical audiologists employed at Illinois State University (classified as *internal*) and audiologists that worked at other university clinics with AuD programs in the state (classified as *external*). Four audiologists from ISU were invited to complete the survey and interview in order to capture the internal viewpoint on AR. The four other graduate Audiology programs in Illinois were each contacted and invited to complete the survey and interview in order to describe the external AR perspective. One program did not respond, despite being contacted multiple times over several weeks.

The internal group response rate was 100% (4 audiologists), and external group was 75% (3 of 4 programs). One of three programs from the external group had two audiologists involved in completion of the survey and interview. Overall, there were four internal audiologists and four external audiologists that participated in the survey and interview for this project.

Procedures

Both internal and external groups were initially contacted and invited via email. All four of the external programs in Illinois were contacted, but one program did not reply. Interview times were scheduled via email with those who responded. Participants were provided a copy of the questionnaire prior to the interview (see Appendices D and E for internal and external questionnaires, respectively).

Interviews were conducted in-person for the clinicians that worked in the ETSHC at ISU (internal group). They were conducted by telephone for audiologists representing two of the AuD programs in the state of Illinois. The final AuD program (external group) survey was conducted via email.

Instruments

A short interview questionnaire was designed to collect information about practices at the university clinic, and to reflect best practices gathered from the current research. The survey was comprised of both open-ended and closed questions. The questions were presented during an interview for all but one respondent, who typed their responses directly onto the survey form. Responses were interpreted to be categorized as *Yes* or *No* answers. To avoid bias, one audiologist from the ETSHC was not interviewed because that clinician is my advisor on this project, as well as the CSD 533 Professor.

For this project, interviews were limited to audiologists, and did not include speech-language pathologists. Respondent data were summarized in tables and were used to determine preferred AR strategies for the university setting. Internal and external respondent data were analyzed independently and, using one of the common questions in the survey (#4), the data were analyzed in aggregated form. Observations from collected data are explained in the following section.

CHAPTER 3

Results

Internal Response Summary

Responses from clinical educators at ISU have been summarized in Table 1. The interview included questions about explicit AR services. More specifically, the interview attempted to determine whether itemized AR services should be offered, and the types of course topics that should be covered. Half of the internal respondents (50%) indicated that our clinic should offer adult AR services as part of the hearing aid fitting appointment. Seventy-five percent of the internal group indicated that group AR sessions should be offered at our clinic. Currently at the ETSHC, only new hearing aid users and a friend, or family member, are invited to the AR program, HHC. All respondents (100%) reported that AR services should be extended to patients that have been diagnosed with hearing loss but have not decided to pursue hearing aids.

Internal group respondents were asked to identify their preferred procedures for an adult AR program, and all (100%) indicated that the program should be comprised of the following:

- hearing aid orientation and sensory management
- communication strategies
- repair strategies
- communication partner support

Seventy-five percent of respondents agreed that self-advocacy and assertiveness counseling and clear-speech training should be included in AR programs. Only fifty percent of respondents indicated that auditory and speech-reading training procedures should be included for adult AR programs.

Only one of the internal-group audiologists (25%) suggested that a patient could attend several group sessions. If a patient requires additional AR services after the group sessions, AR services could be provided on an individual case-by-case basis. Another internal respondent reported that individual services should be offered regularly (on an as-needed basis) for adult patients. Two audiologists (50%) indicated that AR information provided throughout the series of hearing aid appointments was sufficient. This clinician believed that no additional individual sessions were required. In addition, the ideal session length of AR intervention varied among respondents. Internal-group audiologists supported AR session-duration that ranged from 30 to 90 minutes.

Regarding group AR, internal-group responses ranged from never offering AR to once every month. Three of the participants (75%) reported that group AR sessions should be offered more often than every other month. Ideal length per group AR session ranged from one to two hours (mean: approximately 80 minutes) for those respondents who indicated that group sessions should be offered.

Similar internal-group AR principles included inviting patients who have been diagnosed with hearing loss but do not use hearing aids. Additionally, patients in the community who report communication difficulties should be invited, rather than only patients from the clinic who purchase hearing aids. Internal audiologist indicated that the group AR sessions (e.g., *Hearing Help Course*) should be promoted by all audiologists and graduate-student clinicians at the ETSHC, and that the number of attendees per AR session should be increased. Overall, we feel confident about the data obtained from this group. Participants were interviewed individually, and not in a group. Hence, we believe that the similarities and differences seen in their responses might not have emerged if we employed a team interview, such as a focus-group approach.

External Response Summary

Data collected from external AuD program participants in the State of Illinois have been summarized in Table 2. The *external* interview (survey) was comprised of the same AR procedural components as the *internal* interview. The external survey, however, contained an additional section about current services offered at those university clinics. One of the clinics in the external group had two audiologists who participated in the interview; however, Table 2 reflects responses from university programs, not clinicians. Two out of the three participating programs (65%) stated that their university clinic was offering adult audiologic rehabilitation services, not merely prescribing and fitting hearing instruments. The clinic that was not offering AR services at the time of the interview based their responses on the previous program they once provided. All respondents reported that AR services were available (offered) to patients that had hearing loss but were not using hearing technologies. The external group indicated that the following elements should be included in adult AR group sessions:

- self-assessment measures
- hearing aid orientation and sensory management
- communication strategies
- self-advocacy and assertiveness counseling
- speech-reading training
- communication support

Two-thirds of the external participants reported that repair strategies and clear-speech training should be included in the AR program. One-third of the external participants reported that auditory training should be covered in group AR sessions. Although all (100%) reported that

self-assessment measures were used for patients, most respondents stated that they were being completed during the hearing aid evaluation and fitting appointments, not AR sessions.

The external interview was focused on group, rather than individual AR services to align with the project goal. Universities that participated in the external interview reported a variety of AR program elements as well as differences in the duration of the AR sessions. As mentioned previously, one of the AuD programs was not offering AR services at the time of this project. The participants from that program reported that services ceased due to low commitment from patients, budget concerns, and shortage of staff to facilitate group AR courses. All programs (100%) stated that AR sessions were facilitated primarily by AuD students, with the assistance of a faculty member. AR procedures were covered in at least one required academic course for the graduate students for all external programs.

External interview participants described the following components for group long-term and short-term AR programs: (1) sessions in three-week rounds, and (2) one session every ten weeks. The long-term program was offered every week; whereas, the short-term program consisted of four sessions that took place once per week for four consecutive weeks. The participants reported a range of group AR program-session lengths: one to seven and a half hours for each session. For the university clinics that offered multiple group sessions, the material presented and discussed in each AR session varied to cover all preferred content.

For most of the programs, patients did not pay for AR services separately, as it was included in the purchase price of hearing aids. Other reported approaches included donation-based payment for services and a cost of twenty dollars for four sessions. One of the programs reported offering participation incentives for the group AR sessions; however, it had since been discontinued. That program offered free hearing aid batteries to patients who attended group AR

sessions, and a survey was conducted which concluded that patients would attend without the incentive.

The reported information about group AR practices was similar among external Illinois AuD programs. The largest differences existed in the session length and schedule of the AR program. The content covered by each AR program was similar in many aspects, and facilitation of AR services by graduate students, assisted by a faculty or staff member, was also comparable among respondents.

CHAPTER 4

Recommendations

It has been estimated that there are approximately 43 million people 65 years old and older in the United States (Limongi et al., 2015), and these people should have their hearing screened and be provided access to AR programs. Audiologic rehabilitation services should be offered in clinical settings to patients who have reported communication difficulties, including those with and without prescribed hearing aids. For those with hearing aids, it is important that communication and psychological support be provided beyond the basics of hearing aid orientation. Research has found that quality of life has improved in patients who receive AR services. Audiologic rehabilitation services reduce the negative effects associated with hearing loss by providing information and strategies beyond the communication assistance of hearing aids (Preminger & Nesbitt, 2014). Furthermore, AR allows patients to develop more realistic expectations about communicating with hearing loss and use of hearing aids.

Given the negative impact that may be expected on the lives of those with communication problems and hearing loss, an inclusive model is recommended for provision of AR services with patients in a group university-clinic setting. The components of this model have been reflected in a checklist (Appendix F) that may be used by AR clincians. Information from the literature, and responses from survey participants, showed endorsement of group, more than individual, AR sessions because group AR appears to be more time and cost-effective. Graduate students should be the primary facilitators of these group AR courses. Audiologists should fill a support and advisory role for the graduate clinician.

Each group AR session should be discussion and practice-based to provide interaction among participants. Two to three group sessions should be offered per cycle to reduce the

amount of new material presented to patients at one time. Distribution of the content may increase information retention for patients. We suggest that information covered in the group AR program should include:

- self-assessment measures
- hearing aid orientation
- communication and repair strategies
- self-advocacy and assertiveness training
- clear speech training
- communication partner support

Self-assessment measures are a reliable method of determining the most important needs of every AR patient. There are several tools that may be re-administered to gauge the status of communication and quality of life in AR patients. Self-assessment measures may also be used to establish each patient's communication goals. Important items from these tools can be used to drive the discussion in group AR sessions.

Hearing aid orientation should include the hearing aid components, and care and maintenance of the devices. The orientation should be the focus of the hearing aid fitting and then highlighted within the first group AR session. Recommended content should be implemented through practice sessions with attendees, so they are more likely to utilize the techniques outside of the sessions.

It is recommended that AR services be offered without requiring an additional cost to the patient. This should avoid unpromising attendance. A donation-based cost for group sessions may be implemented for university clinics in order to increase clinic revenue through AR services. Offering incentives to patients for attending group sessions is not supported.

Conclusion

Hearing aid technology increases access to sound, however, it is not a miracle cure for hearing loss, so intervention beyond just the hearing aid fitting is compulsory. AR is often underutilized in the clinical setting due to several barriers discussed above. Common barriers include: lack of reimbursement for services, time limitations, lack of quality competency training, and poor patient attendance. Thoughtful planning should occur prior to implementation of AR services. Group AR may be more efficient than individually-delivered AR sessions.

This project focused on current and best practices for adult group AR, although only AuD clinical educators were interviewed. Overall, the responses collected that generated the proposed model may not be generalizable to settings outside a university clinic. The content of the survey was collected from the latest research; however, a possible limitation may be that respondents were providing additional services that were not identified during the interview. To address this, future interviews should include an open-ended portion for AR practices used.

In the future, clinical audiologists from a larger geographic region should be queried to adapt the proposed model into a more universal program. Our participants represented only AuD programs in Illinois. Clinical audiologists from AuD programs outside of Illinois should be interviewed to provide a more comprehensive understanding of current adult audiologic rehabilitation practices at a university. Programs interviewed outside of Illinois should represent are wider range of variables than those included here. Even extending beyond university clinics, audiologists representing a variety of other settings (e.g., hospitals, private practices, residential healthcare sites) could be included in a larger project. A collection of responses from clinicians in various regions of the country might provide a more comprehensive list of current clinical practices of adult AR for wider application.

TABLES AND FIGURES

Table 1. Internal Survey Response Summary

#	Question	Yes	No
1.	Should our clinic offer individual patient AR for adults in addition to the hearing aid fitting?	2	2
2.	Should our clinic offer group AR for adult patients?	3	1
3.	Should our clinic offer AR services to patients who have been diagnosed with hearing loss but have not pursued hearing aids?	4	0
4.	Should the following be included in Group AR Sessions?		
a.	Self-assessment measures (e.g., COSI or HHI-E)	2	2
b.	Hearing aid orientation (sensory management)	4	0
c.	Auditory training	2	2
d.	Communication strategies	4	0
e.	Repair strategies	4	0
f.	Self-advocacy/assertiveness counseling	3	1
g.	Clear speech training	3	1
h.	Speech-reading training	2	2
i.	Communication partner support	4	0

Clinician responses (n = 4) sorted into “yes” or “no” for respondents from the Illinois State University Eckelmann-Taylor Speech and Hearing Clinic.

Table 2. External Survey Response Summary

#	Question	Yes	No
1.	Does your university clinic offer group AR for adult patients?	2	1
a.	Are those services offered to patients who have been diagnosed with hearing loss but have not pursued hearing aids?	3	0
4.	Which of the following services are offered in your AR program?		
a.	Self-assessment measures (e.g., COSI or HHI-E)	3	0
b.	Hearing aid orientation (sensory management)	3	0
c.	Auditory training	1	2
d.	Communication strategies	3	0
e.	Repair strategies	2	1
f.	Self-advocacy/assertiveness counseling	3	0
g.	Clear speech training	2	1
h.	Speech-reading training	3	0
i.	Communication partner support	3	0

Clinic responses (n = 3) sorted into “yes” or “no” for respondents from the Doctor of Audiology programs in the State of Illinois, not including Illinois State University (one of the external programs had two audiologists who participated in the interview; however, the Table reflects responses from programs, not clinicians as in Table 1).

Table 3. Summary of Responses to Question 4

#	Question	Yes	No
4.	Which of the following services are offered in your AR program or should be offered?		
a.	Self-assessment measures (e.g., COSI or HHI-E)	5	2
b.	Hearing aid orientation (sensory management)	7	0
c.	Auditory training	3	4
d.	Communication strategies	7	0
e.	Repair strategies	6	1
f.	Self-advocacy/assertiveness counseling	6	1
g.	Clear speech training	5	2
h.	Speech-reading training	5	2
i.	Communication partner support	7	0

Responses (n = 7) sorted into “yes” or “no” for respondents from the Doctor of Audiology programs in the State of Illinois for Question #4 only (one of the programs did not respond to the survey).

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APPENDICES

Appendix A

Summary of Adult Audiologic Rehabilitation Components

CORE

- Communication status
- Overall participation variable
- Related personal factors
- Environmental factors

CARE

- Counseling
- Audibility and impairment management
- Remediation of communication activity: CLEAR
    - Controlling the situation
    - Lip reading
    - Expectations (realistic)
    - Assertiveness
    - Repair strategies
- Environmental participation improvement: SPEECH
    - Spotlighted
    - Pause
    - Empathy
    - Ease
    - Having a plan

HIO/BASICS

- Hearing expectations
- Instrument operation
- Occlusion effect
- Batteries
- Acoustic feedback
- System troubleshooting
- Insertion/removal
- Cleaning/maintenance
- Service

Appendix B

Appointment Flow: Illinois State University Eckelmann-Taylor Speech and Hearing Clinic

Comprehensive Audiological Evaluation

If hearing loss is not present: monitoring

If hearing loss is present → medical management, medical clearance or waiver for hearing aids (when appropriate)

Hearing Aid Appointment Series

1. Hearing Aid Selection Appointment

- Self-assessment measures to determine patient lifestyle and communication needs (e.g., COSI or APHAB)
- Determine patient preferences for hearing aids
    - Features
        - Level of technology
        - Financial cost
        - Compatibility with desired technology
    - Battery life/size
    - Fit and style of hearing aid
        - Wax or other medical condition limiting best options for that patient?
        - Dexterity of patient
    - Color
- If patient elects to proceed with ordering hearing aids, schedule a Hearing Aid Fitting appointment

2. Hearing Aid Fitting Appointment

- Real Ear Measures using the NAL or DSL fitting formula
- Fine tuning adjustments to improve patient experience and address their concerns, if any (use best clinical judgment)
- Hearing Aid Orientation Paperwork
    - Hearing Aid Contract (Purchase Agreement)
    - Hearing Aid Assurance Checklist
    - Medical Waiver (if not previously obtained and clearance was not returned)
    - Walk-In Hours Information
    - *Hearing Help Course* information
    - Clinic Contact Information and Hours of Operation
- Schedule an Initial Hearing Aid Check Appointment for 2-Weeks out and Hearing Help Course

3. Hearing Aid Check Appointment (1)

- Discuss patient's questions, concerns and experiences with the hearing aids
- Review listening goals from the Hearing Aid Selection appointment (COSI or APHAB)
- Clean and check devices
- Make any necessary changes based on patient feedback
- Perform real-ear measures (if significant changes to settings are made)
- Review Hearing Aid orientation material (if needed)
- Remind patient of Walk-In Clinic Hours and Annual Comprehensive Audiological Evaluation
- Schedule Hearing Aid Check Appointment for 3 months, 6 months

4. Hearing Aid Check Appointment (2)

- Discuss patient's questions, concerns and experiences with the hearing aids
- Review listening goals from the Hearing Aid Selection appointment (COSI or APHAB)
- Clean and check devices
- Make any necessary changes based on patient feedback
- Perform real-ear measures (if significant changes to settings are made)
- Remind patient of:
    - Walk-In Clinic Hours
    - Appointment scheduled for 6 months
    - Annual Comprehensive Audiological Evaluation

5. Hearing Aid Check Appointment (3)

- Discuss patient's questions, concerns and experiences with the hearing aids
- Clean and check devices
- Make any necessary changes based on patient feedback
- Perform real-ear measures (if significant changes to settings are made)
- Remind patient of:
    - Walk-In Clinic Hours
    - Annual Comprehensive Audiological Evaluation

Hearing Help Course

- Set the "ground rules" to facilitate a group environment of openness and sharing
- Explain that the purpose of the HHC is related to the difficulties of hearing loss and communication
- Overview of topics:
    - Visual aspects of communication
    - Communication strategies
    - Self-advocacy
    - Resources to improve Quality of Life (assistive listening devices)
- Guided Practice: Analyzing communication situations that are difficult and require action
- Use reflection questions at end of each topic

Appendix C

Hearing Aid Fitting Checklist

Parts of Hearing Aid

- ☐ Right vs. Left
- ☐ Battery door (on/off)
- ☐ Microphones
- ☐ Program Button
- ☐ Volume Control
- ☐ Tubing/Receiver
- ☐ Earmold/Dome

Battery Information

- ☐ Size/Color Coding: _____/_____
- ☐ Life expectancy
- ☐ How to replace
- ☐ Where to Purchase
- ☐ Toxicity Warning

Care and Maintenance

- ☐ Storage of Hearing Aids
- ☐ Avoid water/moisture
- ☐ Desiccant (if applicable)
- ☐ Cleaning Brush/Wax loop
- ☐ Changing of wax guards (if applicable)
- ☐ Earmold cleaning (if applicable)
- ☐ Repairs
- ☐ Clinic Walk-in Hours

Paperwork

- ☐ Purchase agreement
    - ☐ Hearing aid information (model, type, serial numbers)
    - ☐ Purchase price of hearing aids, earmolds, and any other assistive technology
    - ☐ Trial period
    - ☐ Adjustment period
    - ☐ Service Warranty Information
    - ☐ Loss and Damage Warranty Information
- ☐ Consumer Protection Information
- ☐ Group Audiologic Rehabilitation Information

Appendix D

Survey Questions: Internal

University Adult Audiologic Rehabilitation Services

Date: _____ Contact: _____

Internal Program (ISU Supervisors): Survey Questions

1. Should our clinic offer individual patient AR for adults? Yes No
    a. How frequently would you suggest an individual-patient AR session be offered?
    b. What would be the optimal length of an individual-patient AR session?
2. Should our clinic offer group AR for adult patients? Yes No
    a. How frequently would you suggest group AR session be offered? _____
    b. What would be the optimal length of a group AR session? _____minutes/hours
3. Should our clinic offer AR services to patients who have been diagnosed with hearing loss but have not pursued hearing aids? Yes No
4. Which of the following services should be offered in our AR program?
    a. Self-assessment measures such as COSI or HHIE Yes No
    b. Hearing aid orientation Yes No
    c. Auditory training Yes No
    d. Communication strategies Yes No
    e. Repair strategies Yes No
    f. Self-advocacy/assertiveness counseling Yes No
    g. Clear Speech training Yes No
    h. Speech-reading training Yes No
    i. Communication partner support Yes No
5. Within the constraints of time and resources, what enhancements would you like to see made to our AR program? (Refer to the above list of features.)

Appendix E

Survey Questions: External

University Adult Audiologic Rehabilitation Services

Date: _____ Contact: _____

I am an AuD student at Illinois State University and I'm trying to determine the status of aural (audiologic) rehabilitation services offered by audiology university programs in Illinois. Are you able to answer a couple questions about your AR program?

External Programs: Survey Questions

1. Does your university clinic offer group AR for adult patients? Yes No
    a. How frequently is a group AR session offered?
    b. What is the length of a group AR session?
    c. Are AR services offered to patients who have been not fitted Yes No
    Diagnosed with hearing loss but not pursued hearing aids?

2. Which of the following services are offered in your AR program?
    a. Self-assessment measures such as COSI or HHIE Yes No
    b. Hearing aid orientation Yes No
    c. Auditory training Yes No
    d. Communication strategies Yes No
    e. Repair strategies Yes No
    f. Self-advocacy/assertiveness counseling Yes No
    g. Clear Speech training Yes No
    h. Speech-reading training Yes No
    i. Communication partner support Yes No

3. Does your clinic offer incentives for patients to attend AR services? Yes No
4. How much do you charge for AR services?
5. Are AuD graduate students responsible for the delivery of AR services? Yes No

Appendix F

Recommended Practices Checklist for Group Adult Audiologic Rehabilitation

Recommended Group Adult Audiologic Rehabilitation Practices	
Counseling and Communication	
Select a common issue reported in the most recent self-assessment by patients/family	
Present the common issue(s) and ask patients/family to volunteer some solutions	
Sensory Management	
Provide hearing instrument use information pre-hearing aid fitting	
Provide hearing instrument use information post-hearing aid fitting	
Provide practical guidance for hearing instrument use post-fitting	
Discuss hearing instrument components, operation, and associated technologies (batteries, acoustic feedback, troubleshooting)	
Discuss care and maintenance aspects of hearing instruments (e.g., dry aid kits)	
Discuss telecoil interface options with looped systems	
Discuss Bluetooth interface options for media streaming	
Counseling and Communication	
List communication improvement priorities of communication partners in attendance	
Discuss environmental factors and methods of improving listening/communication	
Present “SPEECH” strategies to improve environmental and participation concerns	
Present communication strategies for improved communication effectiveness	
Discuss repair and coping strategies for communication breakdowns (e.g., “CLEAR”)	
Practice communication/repair/coping strategies (role playing, video, break-time)	
Discuss assertiveness and self-advocacy	
Practice assertiveness and self-advocacy (role-playing, video, break-time)	
Assess status of achievement of goals (re-administer self-assessment tool)	
Provide a plan for continuous AR support, instrument support, and follow-up	