



AUDITORY-VERBAL THERAPY

Science, Research, and Practice

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PREFACE

As one of the editors of *Auditory-Verbal Therapy for Young Children with Hearing Loss and Their Families, and the Practitioners Who Guide Them* (Plural Publishing, 2016), I was fortunate to be part of a global writing team that brought the most current knowledge about Auditory-Verbal Therapy (AVT) to practitioners and parents around the world. In subsequent years, much has changed. The world of science and research and the evolving practice trends in AVT continue to transform the dreams of parents of children who are deaf or hard of hearing into reality, wherever AVT is found. In lieu of a second edition, the concept of a new book about AVT was proposed primarily for the professional community that continually contributes to the worldwide interest in AVT, but also for those anywhere wanting to know more about the exciting progress that drives this evidence-based and evidence-informed intervention for young children who are deaf or hard of hearing and their families.

In a survey of the Listening and Spoken Language Specialist, Certified Auditory-Verbal Therapist (LSLS Cert. AVT) global community, members were asked what they wanted in this new publication. The editors listened, and subsequently for more than two years, *Auditory-Verbal Therapy: Science, Research, and Practice* was planned, developed, and reviewed to offer the reader a blend of some updates on the book of 2016, along with many additional chapters considered highly relevant.

The inspirational work of the pioneers of AVT is woven like a tapestry

throughout the pages of this book in which an international cohort of subject matter experts shares the prevailing science, research, and practice of many inter-related disciplines with Auditory-Verbal practitioners, aspiring Auditory-Verbal practitioners, teachers, special educators, audiologists, speech-language pathologists, psychologists, physicians, surgeons, administrators, students, and parents.

In AVT, parents are respected as the child's first and primary models, most enduring teachers, and most significant agents of change. The partnerships and alliances developed and nurtured by parents throughout their Auditory-Verbal journeys are built on a foundation of shared knowledge, kindness, compassion, respect, gratitude, trust, and mutual commitment. Through professional coaching and guidance, parents who choose AVT become engaged with the practitioners in ways that help them realize the outcomes they greatly desire. *Auditory-Verbal Therapy: Science, Research, and Practice* demonstrates how these partnerships help to integrate listening, spoken language, and cognitive and social development into the daily lives of their children.

The authors here advocate that all children who are deaf or hard of hearing deserve the opportunity to acquire spoken language if that is the desired outcome of their parents. For this to happen, a purposeful plan needs to be developed, implemented, adjusted, re-adjusted, and evaluated throughout the family's lifelong journey.



In 2018, the World Health Organization (WHO) estimated the number of people with hearing loss “to be 466 million persons (6.1% of the world’s population), and that 34 million (7%) of these were children (aged 1 to 15 years).” Alarmingly, 60% of children under 15 years of age have hearing loss due to preventable causes; this figure is higher in developing countries (75%) compared with more developed countries (49%). Despite the fact that most children who are deaf or hard of hearing can benefit from hearing technology and early intervention services, global availability of these remains scarce and inequitable. Production of hearing devices meets less than 10% of the global need, and less than 3% of the need in developing countries; intervention and schooling for children who are deaf or hard of hearing in the latter is sadly lacking. WHO estimates that unaddressed hearing loss poses an annual global cost of US\$750 billion and predicts that unless action is taken, the projected number of people who are deaf or hard of hearing will grow to 630 million (44.1 million children) by 2030 and may be over 900 million (63 million children) by 2050. The mission of this book is to embrace the future with today’s *science, research, and practice*, by encouraging local, national, and global partnerships to bring the outcomes of listening and spoken language to children who are deaf or hard of hearing as effectively and efficiently as possible, wherever they live. The vision is that all barriers to equitable services for young children who are deaf or hard of hearing and their families will disappear. We are all in this together and we have much to do.

“Auditory-Verbal Therapy (AVT) continues to develop along with advances in newborn hearing screen-

ing, innovative hearing technologies, creative systems of family-centered intervention, the enhancement of professional preparation for the highly valued Listening and Spoken Language Certified Auditory-Verbal Therapist (LSLS Cert. AVT®) credential, continuous professional improvement, and the prevalence of evidence-based and evidence-informed practices. Auditory-Verbal Therapy is accepted and promoted in many parts of the world by researchers, scientists, and practitioners and by parents of children with hearing loss, all who have the same desired outcomes: efficient listening skills; intelligible spoken language; age-appropriate conversational competence equivalent to peers with typical hearing; achievement of promising levels of academic performance; an extensive range of careers and employment opportunities; and greater social and personal interactions within their communities and their cultures.” (Estabrooks, 2016)

On behalf of everyone involved in *Auditory-Verbal Therapy: Science, Research, and Practice*, I invite you to gain new knowledge and insights; consolidate what you already know; feel encouraged, appreciated, inspired, and hopeful; and experience a sense of wonder as we all move forward in this new decade—the most exciting time ever for children who are deaf or hard of hearing and their families, for Auditory-Verbal practitioners and those who aspire to be, and for the practice of Auditory-Verbal Therapy.

Warren Estabrooks
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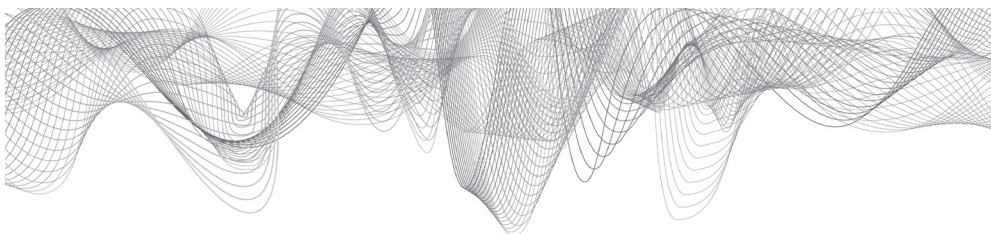
Denise Wray, PhD, CCC-SLP, LSLS Cert. AVT, is a Professor Emerita at the University of Akron where she supervises in the Auditory-Verbal Clinic as well as an ENT Center at Akron Children's Medical Center. Research interests include literacy development in children who are deaf or hard of hearing who are learning to listen and speak using technology. She co-authored over 30 articles and co-directed two grants that developed a specialty in hearing loss for graduate SLP students at UA.

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ABOUT THE COVER



Interwoven soundwaves create a visual imagery of the ups and downs, and highs and lows of being deaf or hard of hearing—from diagnosis to learning to listen and talk, to the fulfillment of personal dreams. Auditory-Verbal Therapy, a journey of lifelong learning, is represented by the warm colors of red, orange, and yellow: AVT's vibrations of energy, happiness, joy, and love. This colorful image defines the strong rela-

tionship created by parents, children who are deaf or hard of hearing, and practitioners as they work together to achieve their expected outcomes through Auditory-Verbal Therapy.

Kelvin Ko
Creative Designer
Hong Kong
<http://www.kkosc.com>





To the pioneers of Auditory-Verbal Therapy
To Auditory-Verbal practitioners and aspiring Auditory-Verbal
practitioners everywhere
To the families of children who are deaf or hard of hearing
who invite us along on their journeys
In memory of Alice Eriks-Brophy







This book is in honor of Pierre-Roch Côté, my greatest blessing in life. Over many years, his example of service, respect, kindness, and love during many publications, including this one, kept me focused as a messenger of harmony among the professions.

Warren Estabrooks





Part I

AUDITORY-VERBAL THERAPY: FOUNDATIONS AND FUNDAMENTALS

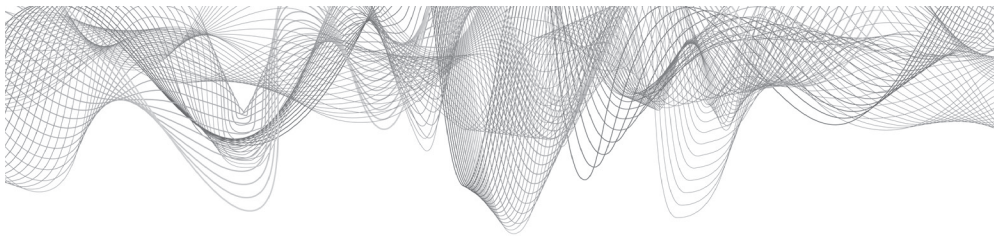




1

AUDITORY-VERBAL THERAPY: AN OVERVIEW

Warren Estabrooks, Helen McCaffrey Morrison,
and Karen MacIver-Lux



Over the last decade, Auditory-Verbal Therapy (AVT) has advanced in tandem with the rapid development and use of hearing technologies, prolific scientific research, and increased artful early intervention practices, to make the exciting outcomes of listening and spoken conversations for children who are deaf or hard of hearing a greater reality than ever before. In addition, the passion of practitioners around the world to acquire the Listening and Spoken Language—Certified Auditory-Verbal Therapist credential (LSLS Cert. AVT) continues to accelerate an evolution in the professional practice patterns and global knowledge of AVT. In agreement with the October

2019 position statement of the Joint Committee on Infant Hearing (JCIH), this book uses the term *children who are deaf or hard of hearing* because this term “(a) is acceptable to a range of stakeholders, and (b) clearly conveys the intended meaning to the entire community” (JCIH, 2019). This term “includes children who are deaf or hard of hearing whose hearing losses may be congenital or acquired, unilateral or bilateral, of any degree from minimal to profound, and of any type, including conductive, sensory (sensorineural), auditory neuropathy, and mixed hearing condition, whether permanent, transient, or intermittent. This spectrum includes those individuals who identify



themselves as being a part of either, or both, the Deaf or hard-of-hearing communities” (JCIH, 2019).

AVT, an evidence-based and evidence-informed early intervention approach for infants, toddlers, and young children who are deaf or hard of hearing and their families, respects *parents as the primary agents of change and primary case managers* in the lives of their children. In AVT the Auditory-Verbal practitioner (the practitioner) and the parents apply specific creative evidence-based strategies in order to promote the optimal and efficient acquisition of spoken language developed primarily through *listening* (Estabrooks, MacIver-Lux, & Rhoades, 2016). *Listening*, therefore, becomes a major force in nurturing the child’s personal, social, and academic life. AVT is a holistic intervention in which social interactions are essential for the development of independent cognitive and linguistic functioning and emphasizes the development of listening and spoken language through natural play, singing, games and daily routines, and all the excitement of daily family life. Consequently, AVT can take place anywhere and anytime.

Driven by 10 principles of practice, the mission of AVT is that practitioners will coach and guide parents in ways that help their child who is deaf or hard of hearing to acquire the best hearing access, the most functional auditory skills, and the most intelligible spoken communication that will open the doors to literacy, academic prowess, interpersonal relationships, and the unlimited and independently made choices offered over a lifetime.

The principles of AVT, inspired by the pioneers of the Auditory-Verbal movement, evolved from an illustrious history

and continue to guide today’s Auditory-Verbal practitioners around the world.

THE HISTORY OF AUDITORY-VERBAL THERAPY

The history of AVT consists of several stories. It’s the story of how the AVT principles came to be. It’s the story of how AVT got its name. It’s the story of the integration of science, technology, medicine, and child development. It’s the story of collaboration across professional disciplines. And it’s the story of coaching and mentoring, as each generation of practitioners reaches out to the next.

Late 1800s and the Scientific Revolution

The 1800s saw the birth of science as an academic discipline, with numerous discoveries and inventions. Several of these set the stage for the development of AVT. Hermann von Helmholtz (1821–1894) established the science of psychophysics, or the study of the relationship between the measurement of a physical stimulus (e.g., intensity or frequency) and the measurement of perception of that stimulus (e.g., loudness or pitch). Alexander Graham Bell (1847–1922), a polymath with many scientific interests, studied Helmholtz’ work in an effort to create a hearing aid for his wife, which led to the invention of the telephone in 1876. Dr. Bell’s use of induction coils to transmit sound led to the creation of the first audiometer, by D. E. Hughes in 1879 (Staab, 2017),



and a means to demonstrate scientifically that people who are deaf or hard of hearing were able to perceive sound.

Early Twentieth Century—Shifting the Paradigm

In the early twentieth century the scientific discoveries and inventions from the nineteenth century were applied to the diagnosis of hearing loss in children and the subsequent intervention, leading to the discovery that “deaf” children were able to respond to sound and learn from the auditory signal. This shifted the paradigm for work with children who are deaf or hard of hearing. Audition was no longer a sense to be ignored in favor of training visual learning. Audition became the focus.

Victor Urbantschitsch (1847–1921) was the first to explore the efficacy of helping children learn through listening. He entered medical practice at the University of Vienna as an otologist. He observed that children who are deaf or hard of hearing responded to his voice when he spoke directly into their ears, described by him as having *residual hearing* despite having been considered “deaf.” Dr. Urbantschitsch went on to devise an approach to training residual hearing, using a systematic method and recording the outcomes. He published his findings in a monograph on *auditory training* (1895, translated by Silverman, 1982) that touched upon a wide range of topics: etiologies of hearing loss, peripheral and central deafness, binaural hearing, the emotional impact of hearing loss, the impact of hearing loss on speech and language, transfer of learning outside the train-

ing setting and training personnel. The many topics in Urbantschitsch’s monograph set a precedent for the knowledge domains expected to be mastered by today’s practicing Auditory-Verbal therapists as well as the topics in this book. Victor Urbantschitsch is considered the father of audiology.

Urbantschitsch’s students Max Goldstein (1870–1941) and Emil Froeschels (1884–1972) were particularly inspired by his mentoring and went on to further the development of AVT. Goldstein, an American from St. Louis, studied with Urbantschitsch following his completion of medical school. When Goldstein returned to St. Louis, he applied his *acoustic method* in therapy sessions as part of his medical practice and published his protocols and outcomes (Goldstein, 1939). He advocated for the use of electronic hearing aids for children at a time when there was concern these would be harmful. His approach to therapy emphasized listening rather than the training of lip reading. In addition, Goldstein founded the Central Institute for the Deaf in St. Louis and the medical journal *The Laryngoscope*, which is still in publication.

Dr. Emil Froeschels was Viennese. He developed a practice working with individuals with a variety of speech disorders and was influential in the development of the profession of speech-language pathology. In 1924 he founded the still-existent International Association of Logopedics and Phoniatrics, which supports research and therapy with individuals with speech and voice disorders. Froeschels emigrated to the United States in 1939 when Germany annexed Vienna, first working with Goldstein in St. Louis and then moving to New York. He established a long



working relationship with Helen Beebe (see below), a “founding mother” of AVT (Duncan & Rhoades, 2017).

Meanwhile, in the United Kingdom, methods for teaching children with hearing loss were also shifting. The Ewings, Lady Irene (1883–1959) and Sir Alexander (1896–1980), were educators who introduced early identification, parent training in the home, and child-centered teaching of children with hearing loss (described by Lady Ewing as *follow the child’s interest*) (Ewing & Ewing, 1947). These fundamental aspects of AVT were considered quite revolutionary (Dawes, 2014). The Ewings also imported the first widely used US clinical audiometer, the Western Electric 2A (Staab, 2017), enabling Sir Alexander to measure thresholds at different frequencies and demonstrate that most “deaf” children had residual hearing. The Ewings and their group developed large table-based hearing aids that parents could take home on loan for use with their children, and developed a teacher-training program that emphasized their parent- and child-centered approach.

Edith Whetnall (1910–1965), an English otologist and educator, extended the work of the Ewings to include an emphasis on infant identification and intervention (Whetnall & Fry, 1954). She stressed that auditory learning developed auditory regions in the cortex (Pollack, 1970) and coined a phrase that is still used in AVT, “listening within earshot.” She followed four principles in her work: (1) learning to listen is fundamental to learning spoken language, (2) what is not used early may not be available later, (3) language is best learned in the give and take of communication, and (4) parents and other family members are the principal vehicles of learning to hear and

talk (Hirsh, 1980). Whetnall called her method the *auditory approach* (Whetnall & Fry, 1954).

1950–1980: Pioneers of AVT

AVT as we practice it today coalesced from 1950 to 1980. There were four common elements in the work of practitioners during this time: (1) early identification and optimal acoustic access to sound with hearing technology, (2) learning spoken language through listening, (3) regarding parents as a child’s primary teachers and active participants in sessions, and (4) child enrollment in regular education settings from early childhood onward (Pollack & Ernst, 1973). Our pioneers broadened the geographic extent of auditory work far beyond Europe to include locations across North America by establishing centers in Pennsylvania, Colorado, and California in the United States, and Montreal in Canada. Among these pioneers were four individuals who are considered to be the founders of modern AVT—Daniel Ling, Ciwa Griffiths, Helen Beebe, and Doreen Pollack.

Daniel Ling (1926–2003), an audiologist and educator of children with hearing loss from the United Kingdom, trained under the Ewings and spent time observing Dr. Whetnall. Dr. Ling set up an infant hearing program and parent-infant training program and for the first time outside London taught children within a regular education setting (Ling, 1993). Ling was invited to Canada in 1963 to be Principal of the Montreal Oral School, where he introduced auditory-based teaching strategies and developed a program for integrating students into regular education classes. Ling and his



wife, Agnes Ling Phillips, established a parent-infant program at McGill University in Montreal and followed with the creation of a graduate program in *aural habilitation* for educators and speech-language pathologists. Ling was the author of numerous research publications and the seminal works *Speech and the Hearing-Impaired Child: Theory and Practice* (1976, 2002) and *Aural Habilitation* (Ling & Ling, 1978).

Ciwa Griffiths (1911–2003), an American, started her career as an educator in regular classrooms (Griffiths, 1991). When a student with hearing loss joined her preschool class, she became interested in learning about ways to best teach her student. During that period of professional development, Dr. Griffiths traveled to the United Kingdom to observe Edith Whetnall and learned about the potential for listening by children with hearing loss. When Griffiths returned home, she established the HEAR Center in Pasadena, California. Like Whetnall, Griffiths called her work the *auditory approach* (Griffiths, 1964).

Helen Beebe (1909–1989), also from the United States, first trained as an educator and later as a speech-language pathologist. During the course of her work in schools for the deaf, Beebe met Emil Froeschels and learned about auditory work. Subsequently, Froeschels became her mentor and colleague for 25 years. She established the Helen Beebe Speech and Hearing Center in Easton, Pennsylvania, and referred to her work as the *unisensory approach*, which highlighted auditory learning as opposed to traditional oral methods (Beebe, 1953).

Doreen Pollack (1920–2005) trained as a speech-language pathologist in London, United Kingdom. She became interested in working with children

with hearing loss when her nephew was diagnosed with a severe hearing loss at age 2. Creating a methodology that was influenced by Dr. Goldstein's work (Pollack, 1993), Pollack and her husband moved after World War II to New York City, where she worked at the Columbia Presbyterian Hospital in a new program testing children's hearing and fitting hearing aids and started a parent-child therapy program.

During this time Dr. Hendrik Huizing (1903–1972), an audiologist from the Netherlands, observed Pollack's work while conducting hearing research at Columbia Presbyterian. Huizing was so impressed by the impact that learning through listening made on children's outcomes that, when he returned to the Netherlands, he focused his work on the diagnosis and habilitation of children with hearing loss using Pollack's approach. He called his work *acoupedics*. Huizing is considered one of the first pediatric audiologists and was one of the founders of the International Society of Audiology (Huizing, 2013).

Pollack and her husband moved to Denver, where she began work at the University of Denver, engaged in early identification, fitting hearing aids, and guiding and coaching parents to help their children learn through listening. Pollack adopted Huizing's term, *acoupedics*, to refer to her own methods (Pollack, 1964). In the early 1960s, she started an *acoupedics* program at Denver's Porter Memorial, where she remained until her retirement in 1981 (Turnbull, 2005).

By the 1970s Auditory-Verbal practitioners were increasing in number. A growing body of literature spread the word about this methodology and its outcomes. Mrs. Pollack published her



seminal work, *Educational Audiology for the Limited Hearing Infant* (Pollack, 1970). This work laid out seven principles of the *acoupedic approach*: early detection, early fitting with hearing aids, a unisensory approach to training, speech development through the auditory feedback mechanism, the development of language following *typical* patterns, parents as a child's first model, and retention of a typical environment (i.e., regular classroom enrollment). All seven principles were to be in place for a program to be considered *acoupedic*. Pollack copyrighted the term "acoupedics" (Goldberg & Flexer, 2012), establishing an early example of treatment fidelity and standardization of the field. Anyone practicing the acoupedic approach could do so only with her approval. Two subsequent editions of Pollack's book were published (Pollack, 1985; Pollack, Goldberg, & Caleffe-Schenck, 1997).

Practitioners and researchers started coming together to create a community to share experiences and outcomes. In 1973, the A. G. Bell Association for the Deaf hosted a conference on the auditory approach and subsequently published a monograph of the proceedings, *The Auditory Approach* (Griffiths et al., 1973). Later in 1974 and 1979, Ciwa Griffiths organized two international conferences at the HEAR center in Pasadena and brought together speakers from Canada, Denmark, Egypt, Germany, Japan, Mexico, and the United States (Griffiths, 1979).

Professionals and families from around the globe visited the centers created by Griffiths, Beebe, and Pollack to learn more about their methods. The Beebe Center established the Larry Jarret House to house families who traveled

to Easton in order to attend weeklong training programs (Goldberg & Talbot, 1993). Pollack conducted summer workshops in Denver for professionals and parents and was awarded a federal training grant in 1978, to train four professionals at a time for 8 months in the *acoupedic approach* (Turnbull, 2005). The Listen Foundation continued this program well past Pollack's retirement through the 1980s, directed by Nancy Caleffe-Schenck (Caleffe-Schenck, 1992).

In 1978, George Fellendorf, former executive director of the Alexander Graham Bell Association for the Deaf and a parent who had worked with Beebe, convened a coalition chaired by Pollack that included Beebe, Ling, and other practitioners of auditory work. The group formed the International Committee on Auditory-Verbal Communication (ICAVC) (Goldberg & Flexer, 2012) and adopted the principles of acoupedic practice (Pollack, 1993). A long discussion ensued to determine the name to give to the work practiced by coalition members (Pollack, 1993). At the time, several terms were in use: auditory training, the acoustic method, the auditory approach, aural habilitation, the unisensory approach, and acoupedics. Dr. Ling suggested a name that was agreed upon by the coalition: the *Auditory-Verbal* approach (Pollack, 1993).

1980-2000: Becoming a Profession

The last two decades of the twentieth century witnessed rapid growth of AVT as a distinct and codified option for families of children with hearing loss. In 1981, the Alexander Graham Bell Association for the Deaf invited ICAVC to



join the Association as a special committee (Goldberg, 1993). ICAVC remained with A. G. Bell until 1986 when it was disbanded by ICAVC leadership and, in 1987, re-formed as Auditory-Verbal International (AVI), an autonomous, non-profit organization. Like ICAVC, AVI adopted Pollack's principles of audiopedic practice as the *Auditory-Verbal Principles*. The ultimate goal of AVI was to promote hearing as the primary route for the acquisition of spoken language skills (Goldberg, 1993).

Several papers were published during this period that further codified AVT. In 1989 AVI approved the Suggested Protocol for Audiological and Hearing Aid Evaluation (Marlowe, 1993), a work that formed the basis for the current Alexander Graham Bell Association's Recommended Protocol for Audiological Assessment, Hearing Aid and Cochlear Implant Evaluation, and Follow-up (A. G. Bell, 2019). In 1990, the Board of Directors of AVI voted to add professional standards and certification of Auditory-Verbal therapists as primary goals (Lake, 2001). A position paper published in 1988 by the Denver-based Auditory-Verbal Network, *A Parent's Guide to Auditory-Verbal Therapy*, was foundational for AVI's work toward developing standards and a path to certification. *A Parent's Guide* described essential aspects and quality indicators of Auditory-Verbal practice: definition of an Auditory-Verbal practitioner, definition of an Auditory-Verbal treatment plan (AVT care plan), and questions parents could ask to ascertain whether the practitioner followed the Auditory-Verbal Principles (Auditory-Verbal Network, 1988). In 1993, *The Volta Review* published a monograph devoted entirely to AVT (Goldberg, 1993).

In 1991 AVI embarked on establishing a certification in AVT. The organization engaged a psychometric company to establish a certification program that included a survey of parents and practitioners regarding the knowledge and skills needed for competent provision of AVT and to create a certification exam. The certification protocol was a precursor to today, with an application process, statement of practice, and letters of recommendation.

In 1994 AVI published the Auditory-Verbal Scope of Practice (AVI, 1994). This paper defined the Auditory-Verbal therapist and the scope of practice of AVT for AVI Certified Auditory-Verbal Therapists (Cert. AVT). The Auditory-Verbal therapist definition listed 10 activities that an Auditory-Verbal therapist must be qualified to carry out. With some adaptations, these 10 activities became the Auditory-Verbal Principles of today. The Scope of Practice described the training and knowledge required for therapists who were certified by AVI. These encompassed eight domains that are similar to the knowledge domains required for current certification for Auditory-Verbal therapists.

The first examination for Auditory-Verbal certification was conducted in 1994 in two sessions. The first session, in Toronto, Ontario, Canada, involved 8 Auditory-Verbal therapists who were involved in creating the exam. The second session took place a few months later in Rochester, New York. A total of 47 individuals from the United States, Canada, and Australia became the first group of Certified Auditory-Verbal Therapists (Cert. AVTs).

In 2003 AVI published the *AVI Standardized Curriculum* for use in training and mentoring professionals in the



Auditory-Verbal approach (AVI, 2003), providing an outline of knowledge domains that an Auditory-Verbal therapist must be able to apply. For 10 years, AVI promoted listening as a way of life and became the certifying body of Auditory-Verbal therapists, until its dissolution in 2004, when the A. G. Bell Academy for Listening and Spoken Language was created solely for the purpose of certification.

In summary, the history of AVT is a history of the synthesis of science, sensory psychology, linguistics, child development, and family support to create a new paradigm that integrates listening into a child's personality (Pollack, 1970). This "new paradigm" is now over 100 years old. Auditory-Verbal certification has been in place for over 25 years, and the practitioners of today owe much to the past and, in particular, to the pioneers. A new generation continues to lead the way forward, as its passionate members shape the future of AVT as a highly regarded, evidence-based, and evidence-informed intervention for children who are deaf or hard of hearing and their families.

THE PRACTICE OF AVT

Auditory-Verbal therapists (practitioners) are obliged to adhere to the Principles of Listening and Spoken Language Specialist (LSLS) Auditory-Verbal Therapy (A. G. Bell Academy, 2017) (see boxed text) when they are practicing AVT. The Principles foster best practices for guiding and coaching families to help their children who are deaf or hard of hearing to reach their highest potential in multiple developmental domains: listening, spoken language, lit-

eracy, cognition, and communication in both academic and social settings.

DISCUSSION OF THE PRINCIPLES OF LISTENING AND SPOKEN LANGUAGE—CERTIFIED AUDITORY-VERBAL THERAPY

1. Promote early diagnosis of hearing loss in newborns, infants, toddlers, and young children, followed by immediate audiologic management and AVT.

Auditory-Verbal practitioners advocate early diagnosis of hearing loss, followed by consistent use of appropriately selected and programmed hearing technology, and regularly scheduled AVT sessions in order to optimize the child's overall developmental and life opportunities. Research indicates that early diagnosis of hearing loss, early fitting of appropriate hearing technology, and immediate implementation of family-centered intervention positively influence outcomes in the development of: functional auditory skills and understanding and production of spoken language (Cowan, Edwards, & Ching, 2018); social-emotional wellness (Warner-Czyz, Loy, Pourchot, White, & Cokely, 2018); literacy and educational outcomes (Geers et al., 2017; Goldblat & Pinto, 2017; Robertson, 2014). Children who are identified with hearing loss by 3 months of age and enrolled in family-centered intervention programs by 6 months of age can achieve close to (Ching et al., 2017) or similar language development as children with typical hearing (Fulcher, Purcell, Baker, & Munro, 2012).



Principles of Listening and Spoken Language—Auditory-Verbal Therapy

1. Promote early diagnosis of hearing impairment in newborns, infants, toddlers, and children, followed by immediate audiologic management and Auditory-Verbal therapy.
2. Recommend immediate assessment and use of appropriate, state-of-the-art hearing technology to obtain maximum benefits of auditory stimulation.
3. Guide and coach parents* to help their child use hearing as the primary sensory modality in developing spoken language.
4. Guide and coach parents to become the primary facilitators of their child's listening and spoken language development through active consistent participation in individualized Auditory-Verbal therapy.
5. Create environments that support listening for the acquisition of spoken language throughout the child's daily activities.
6. Guide and coach parents to help their child integrate listening and spoken language into all aspects of the child's life.
7. Guide and coach parents to use natural developmental patterns of audition, speech, language, cognition, and communication.
8. Guide and coach parents to help their child self-monitor spoken language through listening.
9. Administer ongoing formal and informal diagnostic assessments to develop individualized Auditory-Verbal treatment plans, to monitor progress, and to evaluate the effectiveness of the plans for the child and family.
10. Promote education in regular classrooms with typical hearing peers and with appropriate support services from early childhood onwards.

**Parents* refers to all caregivers in the child's life.

A. G. Bell Academy, 2017, adapted from Pollack (1997), printed by permission.

The Joint Committee on Infant Hearing (JCIH) recommends that all infants be screened at no later than 1 month of age and that those who do not pass the screening have a comprehensive audiological evaluation at no later than 3 months of age (JCIH, 2007). It is also recommended that those infants with confirmed hearing loss begin appropriate intervention (such as AVT) at no later than 6 months of age from health care and education professionals with expertise in hearing loss and deafness in infants and young children. These rec-

ommendations fit well with Principle #1 of the LSLS. Cert. AVT.

Children with severe to profound hearing loss who have early and consistent access to cochlear implants prior to 1 year of age have fewer receptive and expressive language deficits than those who have been implanted after the age of 1 year. Language outcomes for those implanted after the age of 1 decline as the age of implantation increases (Ruben, 2018). When auditory neural connections are developed in early infancy with the use of hearing technology, children



who are deaf or hard of hearing also achieve better reading skills, educational outcomes, and social-emotional growth over time (Langereis & Vermeulen, 2015; Yoshinago-Itano, 2003; Yoshinago-Itano, Sedy, Wiggin, & Chung, 2017). Indeed, children who receive AVT demonstrate not only similar academic outcomes but similar abilities to interact in all social roles just like their age-matched peers who have typical hearing (Constantinescu-Sharpe et al., 2017).

Geers, Nicholas, Tobey, and Davidson (2016) demonstrated that children who are implanted between 6 and 12 months of age and receive AVT achieve significantly higher scores on all measures of language development as opposed to those implanted between 12 and 18 months. Those advantages were maintained from ages 4.2 to 10.5 years. These researchers also cited evidence from a controlled prospective nationwide (USA) study of children with cochlear implant that those who were using an American Sign Language (ASL) approach statistically demonstrated a disadvantage in spoken language and in reading. In a systematic review, Kaipa and Danser (2016) looked at 14 studies that assessed AVT with implanted children and found that AVT provided significant benefits in three domains: receptive and expressive language, speech perception, and mainstreaming.

Practitioners typically offer weekly AVT sessions, although there are some who do provide them more often and some less often, depending on a number of factors. The frequency and duration of typical AVT sessions have been used as a model for guidelines set forth in a position paper of the American Cochlear Implant Alliance (ACIA), entitled “Pediatric Habilitation Following Co-

chlear Implantation” (ACIA, 2015) (Appendix 1). The ACIA position paper cites evidence from the research literature that demonstrates the positive outcomes of AVT as the rationale for the recommendation of one or two 1-hour habilitation sessions per week (Dettman, Wall, Constantinescu, & Dowell, 2013; Dornan et al., 2010; Rhoades, 2001).

2. Recommend immediate assessment and use of appropriate, state-of-the-art hearing technology to obtain maximum benefits of auditory stimulation.

Once hearing loss is identified, immediate assessment and consistent use of appropriately programmed hearing technology is essential so that spoken language is easy to hear, easy to listen to, easy to learn and easy to use. If access to hearing technology is delayed, particularly during developmentally sensitive periods, cortical reorganization will occur (Sharma et al., 2016) and spoken language development will be at risk for delay. Early fitting and consistent use of appropriately selected hearing technology during all of the child’s waking hours provide the auditory stimulation necessary to facilitate the development of neural connections in the brain; and these neural connections provide the foundations for spoken language, reading, and academics (Cole & Flexer, 2011). When hearing technology provides adequate audibility to conversational speech across the speech spectrum, listening and spoken language outcomes are better than those with hearing technology that does not provide such access (Tomblin et al., 2014; Walker, Redfern, & Ole-



son, 2019). Children who demonstrate consistent use of amplification during all waking hours achieved significantly higher scores in vocabulary, grammar, and phonological awareness (Ching, Dillon, Leigh, & Cupples, 2017; Walker et al., 2015). Similarly, consistent access to electrical stimulated information provided by a cochlear implant promotes positive spoken communication outcomes (Li et al., 2014; Wiseman & Warner-Czyz, 2018). Consequently, audiologists, Auditory-Verbal practitioners, and parents form a formidable alliance and continuously assess the effectiveness and appropriateness of all hearing technologies to ensure that the child has consistent and full auditory access to all sounds of speech, all spoken language learning opportunities, and all the other exciting sounds of life.

3. Guide and coach parents to help their child use hearing as the primary sensory modality in developing listening and spoken language.

Currently there is significant evidence to support the validity and value of using hearing (as provided by appropriately selected and programmed hearing technology) as the primary sensory modality for the development of listening and spoken language skills in children who are deaf or hard of hearing. The most compelling evidence is the multi-site study conducted by Geers, Mitchell, Warner-Czyz, Wang, and Eisenberg (2017), who demonstrated that children who had been engaged in auditory-based intervention approaches, such as AVT, achieved better speech recognition skills over the first 3 years post-activation of their cochlear implant(s) and exhib-

ited a statistically significant advantage in spoken language and reading near the end of the elementary grades, compared with children who primarily used visual modes of communication such as American Sign Language (ASL). Geers and colleagues also found that over 70% of children exposed to spoken language primarily through listening achieved age-appropriate spoken language compared with only 39% of those exposed to visual modes of communication for 3 or more years. Finally, better early speech perception abilities of the former group were better (mean = 70%) compared with those who did not have early access to hearing (mean = 51%).

In summary, competency in spoken language, social-emotional development, and literacy skills is highly dependent on the level of access the brain has to auditory information and the subsequent development of listening skills. As parents take advantage of opportunities to help their child develop confidence in listening and, later, in becoming independent managers of their hearing technology, children learn to navigate difficult listening environments and to repair communication breakdowns due to mishearing.

4. Guide and coach parents to become the primary facilitators of their child's listening and spoken language development through active consistent participation in individualized Auditory-Verbal Therapy.

Practitioners in AVT recognize that parents are their child's first and most enduring teachers and the *primary agents of change* in their child's listening and spoken language development



(Estabrooks, MacIver-Lux, & Rhoades, 2016; Kaiser & Hancock, 2003). Therefore, AVT is *individually tailored to the specific needs of the child and family*. It is not a prescription of exercises nor is it conducted as group intervention. The higher the level of family participation and engagement in any intervention program, the stronger the child's language and social growth will be (Moeller et al., 2013; Suskind, 2016; Suskind & Leffel, 2013), thus all AVT sessions are conducted jointly with the parents to promote optimal outcomes in audition, speech, language, cognition, and communication.

The practitioner engages in activities with the child and he/she demonstrates strategies that will facilitate the child's development in audition, speech, language, cognition, and communication. Parents then practice the demonstrated strategies with guidance from the practitioner and then on their own with the child. When parents are actively engaged as participants in the AVT session, they learn how to augment their child's listening and language development, how to enhance their responsiveness to all the child's communication attempts, and how to evaluate progress.

The quantity and quality of spoken language parents use can have a profound impact on the child's linguistic development, educational attainment, and cognitive outcomes (Suskind, 2016). Therefore, parents are taught to use spoken language that will support and facilitate their child's receptive and expressive language growth. Practitioners also help parents learn to identify or create meaningful listening and spoken language learning opportunities within the child's daily environment that will facilitate lis-

tening, spoken language, and cognitive growth. Ultimately, it is the parents who are the primary clients in every AVT session. Thus, parent coaching and the guidance skills of the practitioner in AVT are paramount (Fuller & Kaiser, 2019; Graham, Rodger, & Ziviani, 2013; Kaiser & Hancock, 2003; Kaiser & Roberts, 2013) to helping parents to become effective facilitators of their child's listening and spoken communication development.

5. Guide and coach parents to create environments that support listening for the acquisition of spoken language throughout the child's daily activities.

The daily environment of most typical young children is noisy and presents many listening challenges for all children. Full maturation of the structures of the central auditory nervous system (CANS) that enable the child to accurately perceive auditory signals that are degraded and/or presented in non-ideal listening environments is not achieved until children reach late adolescence (Bellis, 2011). Therefore, immature auditory processing skills, along with poor acoustics in the home, nursery school, and/or early childhood classroom, cause children to have difficulty attending to the voices of their peers and caregivers. Children who are deaf or hard of hearing, however, are at an even greater disadvantage. They need to expend even more energy and cognitive resources to understand spoken language than their hearing peers, especially if they have vocabulary and working memory weaknesses (McCreery, Walker, Spratford, Lewis, & Brennan, 2019). An immature CANS impacted by hearing loss



and auditory deprivation combined with the child's noisy listening environment increases the likelihood that spoken language will be missed or misheard, resulting in missed spoken language learning opportunities. Children who are deaf or hard of hearing, therefore, during the early stages of listening and spoken language development require spoken language input that's easy to hear and learn. Practitioners demonstrate how the listening environment can be manipulated to make spoken language easier to hear, and subsequently higher level auditory processing skills develop so the child learns to understand degraded speech (due to distance, accented speech, poor-quality recordings, etc.) or speech in the presence of non-ideal listening conditions (car, classroom, restaurant, etc.). Practitioners also coach parents to comfortably use assistance hearing technologies, such as remote microphone hearing assistive technology (RM-HAT) coupled to the child's hearing aids and/or cochlear implants, that help provide optimal audibility to spoken language in the child's daily environments.

6. Guide and coach parents to help their child integrate listening and spoken language into all aspects of the child's life.

A key predictor of a child's linguistic, social-emotional, literacy, and academic competencies is the parents' ability to provide an environment that's rich in meaningful and complex spoken language experiences (Leffel & Suskind, 2013; Roberts et al., 2019; Suskind, 2016; Walker, Redfern, & Oleson, 2019). Additionally, 90% of children's vocabulary

is learned through *overhearing* (Akhtar, Jipson, & Callanan, 2001). If the child does not have consistent bilateral auditory access to spoken language, however, linguistic, social-emotional, literacy, and academic outcomes will be compromised. As a multidimensional approach, AVT focuses on the child's development of listening, talking, and thinking, which then encourages the natural emergence of spoken conversations. Thus, parents in AVT quickly learn to prioritize auditory access and auditory skills development. Doreen Pollack, one of the pioneers of the Auditory-Verbal movement, put it this way, "listening must become an integral part of the child's life" (Pollack, 1970, 1985).

Children's development of conversation and social skills are supported best when they are engaged in meaningful, sustained, and rich language experiences and when the parents are responsive to their children's listening, spoken language, cognitive (Moeller et al., 2013), emotional, and social needs (Mashburn et al., 2008). The practitioner, then, needs to have more than just limited knowledge of the family's daily routines. Therefore, an AVT Care Plan is developed *in partnership with the* parents so they can take advantage of every opportunity for listening and spoken language development. In AVT, practitioners help parents to view their child who is deaf or hard of hearing as a child who *bears with hearing technology and actively listens to learn spoken language*. Parents then learn to transform their child's daily experiences into meaningful spoken language learning opportunities as they come to view their child as *a child who bears and actively listens*. Subsequently, the child

