Listening and Spoken Language Therapy for Children With Hearing Loss

A Practical Auditory-Based Guide

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San Diego, CA 92123

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Typeset in 10/13 Stone Serif by Flanagan's Publishing Services, Inc.
Printed in the United States of America by Integrated Books International

Library of Congress Cataloging-in-Publication Data:
Names: Rotfleisch, Sylvia, author. | Martindale, Maura, author.
Title: Listening and spoken language therapy for children with hearing loss : a practical auditory-based guide / Sylvia Rotfleisch, Maura Martindale.
Description: San Diego, CA : Plural Publishing, Inc., [2023] | Includes bibliographical references and index.
Identifiers: LCCN 2021030778 (print) | LCCN 2021030779 (ebook) | ISBN 9781635503876 (paperback) | ISBN 1635503876 (paperback) | ISBN 9781635503883 (ebook)
Subjects: MESH: Hearing Loss—rehabilitation | Language Therapy—methods | Language Development | Auditory Perception
Classification: LCC RF290 (print) | LCC RF290 (ebook) | NLM WV 270 | DDC 617.8—dc23
LC record available at https://lccn.loc.gov/2021030778
LC ebook record available at https://lccn.loc.gov/2021030779

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Introduction

Sylvia Rotfleisch and Maura Martindale

What Was the Vision and Intended Audience for This Book?

Our vision for this book was to create a highly practical guide for professionals who are providing auditory-based listening and spoken language (LSL) therapy for children with hearing loss. The textbook provides educators with a specific model of language, speech, and listening, viewed through the theoretical lens of social interaction theory (Vygotsky, 1962). The approach presented here assumes that children's language is acquired through meaningful social interactions with language models in their environment coupled with their natural innate potential to communicate via a language system. We present a stages approach, as opposed to the more traditional approach using children's ages. It is designed for new, beginning, or experienced professionals, as well as instructors of college-level courses.

Here are some other questions that readers may have about the book.

What Is the Best Way to Use This Book?

- The book's chapters are designed and sequenced for children's success in learning spoken language through listening. It is recommended that the reader use the chapters in sequence as the chapters build on previously covered materials.
- We begin with a chapter on speech acoustics. It is essential for professionals to have a thorough understanding of speech acoustics for an auditory-based therapy approach to be successful and to ensure that children with hearing loss have access to and use all the sounds of spoken language. It is the first order of business.
- Use the table of contents, and the lists of tables and figures, to help you find relevant sections. Flip back and forth to locate information relevant to your work or caseload.
- The model is presented using a color-coded system of stages, consistent presentation of content and tables, and a comprehensive case study for each stage.

What Resources Accompany This Book?

- There is a companion website that includes supports for instructors (e.g., quizzes, lecture slides). On the website, all readers will also find printable handouts from the numerous tables.

- Videos of the different stages that are presented in the model are available and captioned.
- There is an abundance of tables and figures throughout the book to be used as resources for establishing goals and planning sessions. For ease of use, tables for the different stages (Chapters 6 to 11) are consistently organized.
- There are case histories, intervention sessions with scripts, and session analyses.
- A discussion on supporting and guiding parents is presented for readers in the second chapter since the approach is based on the premise that parents will be included in every session. Parents will take on the majority of the therapy at home and in sessions over time.

Why Are the Terms for Strategies Used Here Not Universal in the Field?

- We know that some strategy terms (Chapter 5) do not have consistent names within the LSL field.
- In reading the therapy-specific chapters (Chapters 6 to 11), you may need to refer back to earlier chapters for terms and definitions. The index will assist you.

What Is the Scope of This Book?

- This therapy model is applicable for professionals who teach children with hearing loss, regardless of the type or degree of loss, and these children's parents.
- Professionals working with children with additional disabilities would benefit by using the model with adaptations and in collaboration with the child's multidisciplinary team.
- This model of spoken-language acquisition can be used with children who are English learners, who are from diverse cultures, and are late starters. Use the model in collaboration with the child's multidisciplinary team.
- Professionals currently providing LSL therapy will also find this model very useful in setting goals and planning for individualized lessons for children in their caseloads.
- Typical language milestones presented here are just that—milestones. Numerous tables, figures, and case histories are located within the chapters, which incorporate these milestones and beyond. There are many other textbooks on language development that are more comprehensive and include an in-depth coverage of typical language development.

What Topics Are Included in Previously Published Books?

- There are numerous books that have been published on pediatric audiology, cochlear implants, auditory management, general theory of auditory-verbal practice, and literacy. This book is therapy centered.
- There are other resources, organizations, and published materials for professionals and parents who are providing language instruction in sign

language. We recommend that readers research these resources as it is outside the scope of this book.
- There are numerous audiology textbooks that cover topics such as the anatomy of the ear, and types of assistive hearing technologies, so these topics will not be included here.
- It is assumed that the reader or instructor has a basic understanding of audiology and has some knowledge of the International Phonetic Alphabet (English) or IPA.
- Literacy is promoted by increasing the child's listening and spoken language level to one that is commensurate with hearing peers (Geers et al., 2017; Dettman et al., 2013). Achieving literacy for children is primarily based on their oral language development, abilities, vocabulary development, fluency, access to and discrimination of the sounds of speech, and comprehension of spoken language (Adams, 1994). These are discussed in every therapy chapter as they relate to listening and speaking, but literacy is not a specific focus here in and of itself.

What Terms Are Used for Consistency?

- "Professionals" will be used to refer to teachers, therapists, pathologists, clinicians, interventionists, and any practitioners and/or educators who teach, or will teach, children with hearing loss in homes, schools, centers, and therapy settings.
- "Children" or "child" will be used to refer to young people who have hearing loss and who are infants, preschoolers, and elementary and secondary schoolers in need of therapy intervention to learn spoken language via audition.
- "Hearing loss" will be used to refer to children who have been identified with any and all degrees and types of loss, including those with unilateral losses.
- The term "parents" is used to refer to mothers, fathers, grandparents, guardians, caregivers, adult siblings, or other adults who assume primary responsibility for raising the child.
- We employed both formal and informal language depending on the chapter's topics. For example, the chapter on speech acoustics contains information that requires formal, scientific language, while the chapter that addresses working with parents lends itself to a more informal discussion.

What Is the Sequence of the Chapters?

- In Chapter 1, we begin with a comprehensive chapter on speech acoustics, which is broken down into three sections. This allows the instructor to check for understanding via activities, quizzes, discussion questions, and videos before moving on to the next section. Within each section the reader will find helpful tables and figures that assist in comprehension of rather challenging concepts and content. It is written so that even new professionals will understand how knowledge of this content can be directly related to the child's learning of spoken language via audition using today's hearing technology.

- Chapter 2 discusses how to support and guide parents through the process of assuming the important role of naturally incorporating listening into daily living. Suggestions and ideas on talking to parents about their feelings are discussed, as they are an essential aspect of sessions.
- Chapter 3 includes an explanation of the model, and serves as a guidepost to the rest of the book. In the succeeding chapters, each stage is delineated with an abundance of strategies. The model represents a developmental approach with expectations that children will progress from one stage to the other, following the same trajectory as their typically hearing peers.
- Chapter 4 focuses on assessment, stressing the use of language sampling as a way to monitor a child's progress through the model, plus an overview of other assessments commonly used.
- Chapter 5 provides professionals abundant strategies to include in any auditory-based session with a child with hearing loss and their parents. In other words, the basics of therapy.
- Chapter 6: The Prelinguistic Stage chapter contains a detailed description and strategies for speech, language, and listening at the prelinguistic stage. Well-developed goals for the prelinguistic stage in listening, receptive and expressive language, and speech are presented for use in developing therapy lessons as well as reports. Numerous tables support the content for practical application. An extensive dialogue between the parent, child, and professional provides an example of a typical session at this stage of development.
- Chapter 7: The Single-Word Stage. Once a child has advanced to the single-word stage, this chapter provides a road map of what to expect in the domains of listening, language, and speech. Numerous tables and figures incorporate the basic strategies from Chapter 5 into this stage of development.
- Chapter 8: The Emerging Word Combinations Stage. The child is now able to understand more complex directions, to combine single words into short phrases, and to ask simple questions. Goals are presented in all relevant domains, along with a description of the therapy plan moving forward. An extensive case history of the child and parent, as well as a dialogue of a session at this level, is included. We see the parent taking more of a leadership role in the session with continued support from the professional.
- Chapter 9: The Communication With Childlike Errors Stage. This chapter targets the language user whose expressive language contains errors similar to those of the typically hearing child who is learning to talk. The child's listening skills have advanced considerably and longer conversations are possible, even with unfamiliar adults. A list of engaging games is included, along with suggestions on what skills to incorporate within each game. The parent is taking the lead during the extensive case history and intervention session. Tables of practical information and goals assist the reader in planning therapy sessions.
- Chapter 10: The Competent Communicator Stage. While able to hold more extensive conversation and to continue to build an expanding vocabulary, this child may experience some

difficulties in larger groups and in noisy backgrounds. Auditory abilities are at a very high functional level and the student is able to participate in most social situations where language is essential. The case history, with a language sample and intervention session, aim to deal with communication breakdowns and hold the student to an even higher level of linguistic knowledge. More complex assessments are conducted and illustrate the expectation of growth in all domains.

- Chapter 11: The Advanced Communicator Stage. The reader will become familiar with a student who is at or above typical levels of language usage in social and academic settings. Easy-to-use tables assist the reader in guiding students to linguistic independence, the ability to acquire complex academic vocabulary, and becoming comfortable in social situations with adults and peers using verbal and nonverbal clues. Goals are complex and lead the parent and student to becoming responsible for their own growth. It should be noted that most children at this stage would no longer require weekly therapy or any therapy at all, just occasional check-ins a few times a year as needed.

The authors thank you for joining us in learning how to support children with hearing loss and their parents. We hope this book will add to your professional journey.

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Chapter 3

Stages Not Ages Model

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Key Points

- Children develop complex skills in a developmental sequence whereby they acquire foundational skills that supports the next step toward mastery.
- The habilitation stages model is an orderly process facilitating the abilities of children to follow the normal sequence of development.
- Clear and realistic expectations are important to the habilitation process.
- Development of listening and spoken language competence is dependent on the facilitation and emergence of the auditory skill development.
- Professionals working with children to develop listening and spoken language mastery must understand the normal sequence of development of listening, speech, language, and the cognitive and social components of communication.
- Development of listening and spoken language competence is dependent on and scaffolded by the facilitation and emergence of the auditory skill development.

This chapter and the following chapters present a model for habilitation that is developmental and sequential. We are not presenting a remedial approach, but rather a sequence of stages that is applicable to a child with either delayed skills or typical development. This habilitation model is an auditory-based therapy that follows typical child development in each domain: listening, speech, language, and the cognitive and social components of communication. Information on the stages model for habilitation is summarized along with information to help determine which stage of habilitation is most appropriate for an individual child. The intervention chapters are designed to assist and support professionals in the development of goals based on thorough assessments in a variety of domains, using both formal and informal approaches. A number of detailed developmental tables are included here for your reference and to help focus on where and how the child should be progressing over time. Tables provided can be used to assist in determining each child's individual level of performance, and as the foundation for

treatment planning of long-term goals and short-term learning outcomes for instruction.

When lesson planning for therapy sessions based on goals, consider that individual learning outcomes during therapy sessions may include a number of the goals within a single activity, such as food preparation. Sharing the intended outcomes of any activity with parents prior to beginning each session will help them see progress, areas of need, and what strategies worked (and which did not). At times, a spontaneous action or reaction may touch on a learning outcome that was not planned, such as the child wanting to know what an article of clothing or utensil is called. Careful note taking in sessions is essential to keep track of whether or not learning outcomes were achieved.

Stages/Sequence of Development (Flow Chart)

Newborns have limited abilities but will master many complex skills as they mature and as their brains develop. This is evidenced from the time they are born as they master skills such as walking and talking that have predictable, known sequences for typically developing children. Infants do not just walk or run without developing through the necessary foundational skills such as head control, trunk and leg control, balance, weight transfer, and reciprocal leg movement. Just as other complex skills develop in a known sequence, so too do listening and spoken language abilities. In this book we address habilitation based on that premise. We must begin with the foundation abilities and in particular the auditory access. Given appropriate and sufficient auditory input, we provide habilitation, facilitating progress through developmentally sequential stages of listening and spoken language development. Language begins significantly before the child utters their first word approximation and has a definite progression, just as other complex developed skills. We must begin at the beginning. We start at the foundational skills and proceed in a systematic developmental sequence. This is the way the brain wants to develop.

The premise of the intervention chapters is based on determination of the child's stage in the development of listening and spoken language and progressing through to the more advanced stages. With that in mind, this habilitation model follows six defined intervention stages (Table 3–1). Chapters 6–11 represent each stage and consist of detailed information on skills in audition, listening and spoken language skills, recommended goals, activities to illustrate implementation of goals, and a comprehensive case history accompanied by a sample intervention session.

As you begin to apply the stages to intervention, you first decide at what stage the child is functioning. Once the child's level is determined, you begin habilitation from that stage and allow

Table 3–1. Model for Intervention

Stages Model for Intervention
1. prelinguistic
2. single word
3. emerging word combinations
4. communication with childlike errors
5. competent communicator
6. advanced communicator

the listening and spoken language levels to build as skills are mastered. In this way, habilitation begins at the appropriate skill level and progresses developmentally and sequentially from the early language stages to the advanced ones. Formal assessments and informal evaluations of the child will assist in determining the starting point for the child's habilitation program (see Chapter 4), but we can use some primary characteristics to determine the stage. The most important criteria for understanding the stage to begin with in the intervention model are listed in Table 3–2. There will be differences within the stages of what individual children are able to do. A newly identified child in the prelinguistic stage might have some of the skills or none depending on previous auditory access. If the child experienced some auditory access prior to being fit with technology, they might be vocalizing and turn taking, and may have one or more receptive words. Another child might have had no auditory access at all prior to receiving their technology and could have no auditory attention to sounds, could not yet understand that sounds have meaning, and could be nonvocal. Another example could be with children in the communication with errors stage. One child in this stage might have ongoing errors that are limited to /s/ morphemic functions such as plurals and possessives due to continued limited access to the high frequencies. Another child also in this stage might be using telegraphic phrases with only key words (e.g., "daddy go bye-bye car") and have limited use of grammatical structures while learning to attend to quieter sounds and unstressed words within complete sentences.

Following this intervention model means that a 2-month-old or late-identified 2-, 3-, or 4-year-old child could all be in the same stage of listening and spoken language development, working toward the same goals. The selected activities and

Table 3–2. Indication for Placement Into Stage

Expressive Language Indication		Stage/Chapter
Does not have a word approximation or protoword	→	prelinguistic stage Chapter 6
Uses a word approximation or protoword	→	single-word stage Chapter 7
Has combined two words together to create an original phrase	→	emerging word combinations stage Chapter 8
Combines three to four words	→	communication with childlike errors stage Chapter 9
Speaks with complex, grammatically correct language	→	competent communicator stage Chapter 10
Fully competent language communicator with an ever-growing vocabulary	→	advanced communicator stage Chapter 11

interaction style would need to be individualized appropriately for a 2-month-old compared to the 2-year-old or the 4-year-old based on their developmental and cognitive levels. Considering this example, we realize that the newly identified older child should not begin intervention working on skills that are typical for a child of their chronological age. As professionals, we must guide the family to understand that we do not begin with language skills based on the chronologic age level. We begin with the foundation skills, understanding that spoken language has meaning and expresses communicative intent.

Parents and some professionals working with such cases will be concerned about the lack of expressive language and want the child to be talking. However, that would be like expecting a 2-month-old to walk. It would be building the house by starting on the second floor without the foundations of auditory access and understanding premise of audition, listening, and spoken language. Habilitation needs to be approached systematically and developmentally. The child must begin with auditory attention, learn to use their voice for communication, and then start to develop receptive and expressive words. Word combinations cannot begin until there is adequate listening and some basic expressive and receptive vocabulary, just as the child cannot take a first step before they can stand up and balance. The 2-year-old in this example is not ready to be doing what their peers are doing—combining two words together or using plurals and possessives. Similarly, the 4-year-old with new auditory access cannot have goals for the skills expected in typically developing 4-year-old peers. This child is not able to understand or answer "wh-" questions because he does not have the receptive language and cannot be expected to combine three and four words together when he does not have expressive words.

There is not a defined period of time that a child might be in a given stage; it is dependent on the skills being facilitated and mastered. It is important to monitor and evaluate the child for progress in development of listening and spoken language, and the mastery of skills targeted in the goals. Skill development can also be used to help determine transition to the next stage. Skills that are indicative of transition to the next habilitation stage are included briefly in Table 3–2 and in tables in the therapy chapters.

Determining Child's Level

Skills to be developed during the various stages are included in detail in each of the tables of each intervention chapters. Expected listening, speech, and language skills from the stages are indicated in Table 3–3 to illustrate the progression of habilitation stages.

Each intervention chapter includes multiple tables. These tables are provided for ease of use, for continuity across the chapters, and to summarize the content for each stage of intervention. They are intended to be used for reference. For these reasons, the tables are used to address important content areas for each specific stage, and are presented in the same format and with consistent numbering across the intervention chapters. For example, the auditory abilities will consistently be in Table 1 in the therapy chapters, whether at the prelinguistic level or the word combination stage. The content areas covered in the tables in the intervention chapters are summarized in Table 3–4.

Expectations for Growth

What are realistic expectations of spoken language growth in children using an auditory-based approach? In addition to monitoring the child's growth over time in many domains, the **parents' growth** in the intervention process would also be important to document. Cole and Flexer (2007) created an excellent and easy to use checklist with 21 specific parent/caregiver behaviors that promote listening and spoken language in young children. You may need to start with the importance of full-time device wearing and model how to respond to communicative intents that maximize language development.

For **children's growth** over time, desired outcomes are a focus at the onset of therapy at any stage to determine if the expectations are realistic, depending on multiple factors involved for the family and the child with hearing loss (Macaulay & Ford, 2013). If the child is older and the parents are dealing with the identification of hearing loss, they might need to look at the research indications for the outcomes for older children with hearing loss who are delayed or have late access to audition.

The desired outcome of auditory-based therapy is for the child with hearing loss to develop age-appropriate spoken language for full participation in society. With advances in the early identification of hearing loss and access to high-quality hearing technologies, there is ample research to document excellent outcomes for children whose hearing loss is detected at less than 1 year of age and who receive access to high-quality auditory-based intervention (Rotfleisch & Martindale, 2012).

The best way to know if a child is making adequate progress toward this goal is through a well-designed and comprehensive assessment plan in which data is systematically collected, analyzed, and evaluated at defined intervals. This plan paints an overall picture of the child's maximum performance and typical performance. Data collected from standardized assessments can be compared to that of peers who are developing typically. These assessments are the best instruments to provide ongoing information regarding adequate progress, help professionals obtain objective measures, allow for accountability of service delivery, and identify areas of concern (Geers et al., 2017).

Best practices and standards of care indicate that a child in an appropriate intervention service should make at least *1 year of growth in 1 year's time*, keeping pace with their peers across multiple domains. These domains include auditory skills, prelinguistic communication, receptive and expressive language, speech perception and production, pragmatic skills, literacy, inclusion, cognition, social skills, and academic abilities.

Skills are expected to emerge as a result of auditory access in an expected sequence over periods of time and must be facilitated and monitored. The lack of progress in acquiring auditory abilities will indicate that auditory access may not be appropriate. Based on the auditory information the child with hearing loss is accessing through the hearing technology, we should expect to monitor skills emerging in the appropriate sequence and time frame. We collect data on initial auditory access through observed behaviors of the emerging auditory skills. Numerous informal checklists and formal assessments can assist in tracking emerging skills and are discussed in Chapter 4 on assessments. As we gather details on auditory abilities, we must be certain that responses are

Table 3–3. Basic Indications of Progression Through Stages of Intervention

Indications of Prelinguistic Stage
Demonstrates inconsistent or no responses to variety of sounds
Shows limited or no comprehension of words
May or may not use their voice with any communicative intent
Does not have a word approximation or protoword

Indication of Progression to Single-Word Stage
Demonstrates access to and responds to variety of speech sounds and features
Shows comprehension of a few different words
Uses voice in babbling with communicative intent
Uses a word approximation or protoword

Indication of Progression to Emerging Word Combinations Stage
Demonstrates a two- to three-item auditory memory
Follows two-part related commands
Has consistently emerging receptive and expressive vocabulary on a weekly basis
Has combined two words together to create an original phrase (e.g., "more juice")
Uses variety of consonants in words and word approximations

Indication of Progression to Communication With Childlike Errors Stage
Combines three to four words
Shows comprehension of a variety of grammatical structures including pronouns, negatives, prepositions
Uses some grammatical morphemes typically; e.g., -ing verb endings, prepositions (in, on), plural and possessive /s/ functions
Rapid increase in receptive and expressive vocabulary with early concepts emerging

Indication of Progression to Competent Communicator Stage
Speaks with complex, grammatically correct language
Uses language consistently to converse and express themselves
Follows a conversation of an appropriate subject/language, maintains the topic
Uses discourse format to tell a story or explain something.
Knows a variety of words of multiple meanings (e.g., too/to/two, trunk, hare/hair, fly [noun and verb])
Uses irregular plurals and past tenses
Understands passive voice sentences, subordinate and coordinate clauses
Limited or no grammatical errors

Table 3–3. *continued*

Indication of Progression to Advanced Communicator Stage	
Has conversations using most conversational norms	
Fully competent language communicator with an ever-growing vocabulary emerging in Tiers 2 and 3	
Consistently discriminate:	
Initial consonants different by manner	Final consonants different by manner
Initial consonants different by voicing	Final consonants different by voicing
Initial consonants different by place	Final consonants different by place

Indication of Progression to Successful Language Communicator With Advanced Competence Stage
Uses listening and spoken language comparable to an adult
Learns new vocabulary regularly from both Tier 2 and 3 in academic and daily life settings
Competent conversationalist and emerging skills for public oral presentations
Understands social language and cues including jokes, idioms, sarcasm, and inferences

Table 3–4. Organization of Table Content in Intervention Chapters

Table Number	Content Area
1	Auditory abilities
2	Language and speech skills
3	Auditory goals for understanding sound as meaningful
4	Auditory goals for development of the speech production system
5	Auditory goals for language comprehension
6	Auditory goals for developing expressive language
7	Knowledge areas for professionals and to guide parents
8	Optimal strategies to be implemented
9	Guide and coach parents to do with child
Summary table	Skills that are expected by the end of the stage and indicate progression to next stage