TREATMENT RESOURCE MANUAL

for Speech-Language Pathology

Sixth Edition

Froma P. Roth • Colleen K. Worthington

Plural Publishing Inc.

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Dedication

*For **Ilana** and **Eli**, each unique and extraordinary, who continue to fill my life with light and infinite delight; and to **Graydn Robert** and **Harper Rose**, our newest and brightest lights.*

FPR

*For **Leigh-Anne**, the small miracle who will always be the heart of my heart.*

CKW

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Preface

The original purpose of this manual was to provide beginning speech-language pathology graduate students with a practical introductory guide to intervention. It also provided practicing clinicians with a single resource for specific therapy techniques and materials for a wide variety of communication disorders. This new edition continues to fulfill these aims and also reflects the changing information and recent advances in the field of speech-language pathology that are essential to address in a text of this kind. The revisions made in the sixth edition constitute substantial changes in content compared to previous editions. Selected examples include (a) a new chapter on contemporary issues in the profession, such as critical thinking, telepractice, simulation training, and billing/coding information; (b) expanded information on programming with transgender voice disorders; (c) expanded information on intervention with traumatic brain injury; and (d) expanded discussion of multicultural issues relevant to clinical work. We carefully updated each chapter in the areas of treatment efficacy and evidence-based practice to ensure that the book reflects the most current thinking in the research and clinical spheres. Two main factors created the need for a resource of this kind for students. First, speech-language pathology programs across the country are rapidly adopting a preprofessional model of education that minimizes clinical practicum experience at the undergraduate level. Thus, even students with undergraduate degrees in communication disorders are entering graduate school with very little direct knowledge of basic therapy approaches, techniques, and materials. Second, master's programs in speech-language pathology are attracting an increasing number of students with bachelor's degrees in areas other than the hearing and speech sciences. These students enter clinical training without any supporting background. As a result, a genuine need exists for a user-friendly and comprehensive source of effective, practical suggestions to guide beginning clinicians through their first therapy experiences.

Another primary use of this book is as a text for undergraduate and graduate-level courses in clinical methods. Traditional textbooks for such courses tend to be largely theoretical in nature and lack useful information on how to do therapy. Thus, instructors are often faced with the task of assembling their own clinical materials to complement the text. One of the aims of this text is to provide such supplementary information in a single source. In response to requests from readers, this new edition is accompanied by quizzes and PowerPoint slides for each chapter, along with a premium website containing the forms and appendices in the book for easy download and use.

This manual also was written with the practicing clinician in mind. Speech-language pathologists are handling caseloads/workloads with a broader spectrum of communication disorders than ever before. This trend is occurring in all clinical settings, from hospitals to public schools to early childhood centers. Moreover, there has been a dramatic increase in private practice as a service-delivery model in the field of speech-language pathology. Many practitioners work independently and may not be able to consult readily with colleagues about the management of communication disorders that are outside of their main areas of expertise. This manual can serve as an accessible and reliable source of basic treatment information and techniques for a wide range of speech and language disorders.

The information in this book is based on existing knowledge about communication disorders and available research data, as well as the combined clinical experiences of the authors. It is not

intended as a cookbook approach to intervention. The complexities of communication disorders preclude such a parochial approach. The therapy targets and activities we included are meant to serve as illustrations of basic intervention practice, and only as starting points in the therapeutic process. By their very nature, therapy programs for communication disorders should be designed to accommodate each client's unique strengths and weaknesses as well as individual learning styles.

Text Organization

The manual is organized into two main sections. The first section (Chapters 1 and 2) covers basic principles of speech-language intervention and information reporting systems. The second section includes eight chapters (Chapters 3 to 10) devoted to therapy strategies for specific communication disorders. Each of these chapters includes a brief description of the disorder, example case profiles, specific suggestions for the selection of therapy targets, and sample therapy activities. These have been designed to illustrate the most common characteristics of a given disorder, as well as typical approaches to treatment. Each chapter concludes with a set of helpful hints on intervention and a selected list of commercially available therapy materials

The second section also includes Chapter 11, which offers practical suggestions for beginning clinicians regarding effective client and family counseling skills. Chapter 12 offers discussion and guidelines regarding multicultural issues in speech-language interventions. And, this sixth edition of the book concludes with a new chapter that incorporates discussion in profession-wide areas of emergent interest to educators, students, and clinicians. Reference tables, charts, and reproducible forms are included throughout the manual.

The focus of this text is on the most common characteristics and treatment approaches for a given disorder. Unusual or atypical populations are beyond the scope of this book. This book is written from the perspective of Standard American English. The information, procedures, and activities contained in each chapter should be adapted in a culturally appropriate manner.

New to the Sixth Edition

This new edition includes updated citations and references throughout as well as current information on treatment efficacy in all disorder chapters to reflect recent developments in the field. In addition, we added the following:

- a new chapter on contemporary issues, including critical thinking, telepractice, simulation technologies, and coding and reimbursement;
- new tables on skill development in gesture, feeding, and vision;

- new information on therapist effects/therapeutic alliance;
- coverage of emerging techniques for voice disorders and transgender clients; and
- expanded information on
  - childhood apraxia of speech,
  - cochlear implants,
  - cultural and linguistic diversity,
  - interprofessional practice,
  - shared book reading,
  - traumatic brain injury,
  - treatment dosage/intensity, and
  - vocabulary development.

PluralPlus Companion Website

This edition comes with access to a PluralPlus companion website containing PowerPoint lecture slides and quizzes for each chapter, and all of the forms from the book in digital format for easy duplication and customization to specific experiences. See the inside front cover of the book for the website URL and access code.

Acknowledgments

We thank the many people who have contributed their time, efforts, and talents to the preparation of this revised edition. Enormous appreciation is extended to our colleagues who generously shared with us their insights, expertise, and libraries: Eusabia Mont, Kristin Slawson, and Nicole Nguyen. And as always, we thank our husbands, Eddie and Joe, for their support and encouragement, which never wavered throughout the lengthy revision process.

In previous editions, we acknowledged the invaluable technical support of our colleague, Emily (Mineweaser) DeAngelis. In this sixth edition, we also express our deep gratitude and respect for her extended contribution as author of the substantive section on traumatic brain injury. Emily's content knowledge, her enthusiasm for clinical practice, her superlative copy editing skills, and her ability to consistently produce excellent work under tight timelines continue to serve as a genuine source of inspiration to both of us.

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Part One

Preparing for Effective Intervention

Chapter 1

The Essential Ingredients of Good Therapy: Basic Skills

Philosophy

In the field of communication disorders, the domains of research and clinical practice are frequently regarded as distinctly separate entities. It is true that the aims of the two activities are very different. The main purpose of research is to add to the existing knowledge base in a given area, whereas the ultimate goal of clinical work is to change behavior. However, the two activities also share many common characteristics, and these similarities outweigh the differences. The most fundamental similarity is that both research and clinical practice are scientific processes based on the highest quality of evidence available (often referred to as evidence-based practice). Therefore, it is our view that intervention, like research, should be based on the principles of the scientific method. Both research and intervention involve the following:

- Identification of a problem
- Review of existing knowledge regarding the problem area
- Formulation of hypotheses about how to solve the problem
- Manipulation of the independent variable(s)
- Collection and analysis of data
- Formulation of conclusions about the validity of the original hypotheses

Based on the authors' experiences, an essential ingredient to successful intervention is critical thinking. Critical thinking is the objective analysis and evaluation of an issue to form a judgment, which goes beyond memorization/recall of information and is free from feelings or personal biases. Teaching beginning clinicians critical-thinking skills supports their ability to manage complex issues inherent in clinical work. This important topic is discussed more extensively in Chapter 13.

Speech and language intervention is a dynamic process that follows a systematic progression. It begins with the diagnosis of a communication disorder and is followed by the selection of appropriate therapy targets. Training procedures are then implemented to facilitate the acquisition of the target behaviors. The intervention process is complete when mastery of these behaviors is achieved. Periodic follow-up is performed to monitor retention and stability of the newly acquired behaviors. Throughout all stages of therapy, advocacy is an important role for the speech-language pathologist (SLP). All clinicians should be aware of the Americans with Disabilities Act (1990). This federal legislation (Public Law 101-336) and its amendments (Public Law 110-325) prohibit discrimination and ensure equal opportunity in public accommodations, employment, transportation, government services, and telecommunications (see https://www.ada.gov for more specific information). Speech-

language pathology is a dynamic profession that is continually evolving. The **scope of practice** in speech-language pathology is delineated by the American Speech-Language-Hearing Association, or ASHA (ASHA, 2007b). SLPs are responsible for fully understanding the areas of communication and swallowing that they are qualified to address (e.g., voice, language, fluency) as well as the range of services that they are eligible to deliver (e.g., screening, consultation, treatment). A related document of major importance to all SLPs is the 2016 **ASHA Code of Ethics** (see Appendix A at the end of this book). This document outlines standards for professional behavior with regard to several areas (e.g., client welfare, SLP competence level, public understanding of the profession).

Universal Design Principles for Learning: An Overarching Framework

In 2000, Rose and Meyer put forth a framework based on the premise that every individual, regardless of physical, cognitive, sensory, learning, or other type of disability, is entitled to universal access to information and to learning. Their model is characterized by three universal design principles for learning (UDLs): multiple means of representation, multiple means of expression, and multiple means of engagement. As applied to educational and clinical settings, it is meant to be a theoretical framework for providing the most appropriate supports for children and adults and includes the following:

- *Multiple means of representation:* There must be multiple methods available by which individuals can access and learn important information and skills (e.g., traditional textbook augmented by supplemental Internet resources, speech-to-text media).
- *Multiple means of expression:* Various methods and modalities must be available for individuals to demonstrate their mastery of information and skills.
- *Multiple means of engagement:* Individuals must be provided with enough successful learning opportunities and meaningful interactions to maintain adequate motivation for learning.

The crux of UDLs is instructional flexibility to provide the most suitable options for different learners. For individuals with disabilities, UDLs include accommodations, modifications, and assistive technology. **Accommodations** are changes that help clients overcome or compensate for their disability, such as preferential seating or allowing written rather than spoken communication. **Modifications** are changes in informational content or expectations of an individual's performance. Examples include a decreased amount of classwork/homework or reduced goals for productivity or learning.

Also inherent in UDLs is the use of **assistive technology (AT)** as support for students and adults with disabilities (Dalton, Pisha, Eagleton, Coyne, & Deysher, 2002; Hall, Meyer, & Rose, 2012; Ralabate, 2011; Strangman, 2003). AT may include speech-to-text software that converts speech into text documents, translation software for English-language learners, and Internet access as a means of information gathering. In all cases, adequate training must be provided so that individuals can use the AT successfully and reliably. We must emphasize that these technologies are supportive and do not replace direct instruction.

General Principles of Intervention

The basic principles of effective intervention are consistent with a UDL framework and apply to clients of all ages and disorders. These include the following:

- Intervention is a dynamic rather than static process in which the clinician continuously assesses a client's progress toward established goals and modifies them as necessary.
- Intervention programs should be designed with careful consideration of a client's verbal and nonverbal cognitive abilities. Knowledge of a client's level of cognitive functioning is critical to making decisions about eligibility for treatment and selecting appropriate therapy objectives.
- The ultimate goal of intervention is to teach strategies for facilitating the communication process rather than teaching isolated skills or behaviors (to the extent possible). Whereas skills are required to achieve specific outcomes in given situations, strategies enable the individual to know when and how to use these skills in new and varied learning contexts.
- Speech and language abilities are acquired and used primarily for the purpose of communication and therefore should be taught in a communicative context. To the extent possible, therapy should occur in realistic situations and provide a client with opportunities to engage in meaningful communicative interactions.
- Intervention should be individually oriented, based on the nature of a client's specific deficits and individual learning style.
- Intervention should be designed to ensure that a client experiences consistent success throughout all stages of the therapy program.
- Intervention is most effective when therapy goals are tailored to promote a client's knowledge one step beyond the current level.
- Intervention should be terminated once goals are achieved or the client is no longer making demonstrable progress.
- Intervention practices must be based on the best scientific evidence available.
- Intervention should be sensitive to a client's values and beliefs as well as cultural and linguistic background.

To provide effective intervention for any type of communication disorder, SLPs must acquire certain essential clinical skills. These skills are based on fundamental principles of human behavior and learning theory. The following categories of clinical skills are the building blocks of therapy and serve as the foundation for all disorder-specific treatment approaches:

- *Programming:* Selection, sequencing, and generalization of therapy targets
- *Behavior modification:* Systematic use of specific stimulus-response-consequence procedures
- *Key teaching strategies:* Use of basic training techniques to facilitate learning
- *Session design:* Organization and implementation of therapy sessions, including interpersonal dynamics
- *Data collection:* Systematic measurement of client performance and treatment efficacy

Successful intervention requires the ability to effectively integrate these five parameters into a treatment program. Appendix 1–A provides a checklist of clinician behaviors that correspond to each

of the parameters. This checklist can be used by students as a guide for observing therapy sessions or by supervisors for evaluating student clinician performance. The remainder of this chapter is devoted to a detailed discussion of each basic skill area.

Programming

Programming involves the selection and sequencing of specific communicative behaviors. New behaviors are introduced and taught in highly structured situations with multiple prompts and maximal support provided by the clinician. Subsequent activities progress through a hierarchy of difficulty and complexity, with decreasing support from the clinician. The client demonstrates generalization of each newly learned behavior by using it in novel situations or contexts. The programming process culminates with a client's habitual and spontaneous use of a behavior in everyday speaking and listening situations.

Selection of Therapy Targets

The first step in programming is identification of the communication behaviors to be acquired over the course of the treatment program. These therapy targets are often referred to as **long-term goals.** Initial information about potential therapy targets should be obtained by reviewing the results of previous diagnostic findings. Frequently, assessment data are based, in part, on the administration of standardized tests. These tests typically are designed to sample only one or two exemplars of a given communication behavior. However, a single incorrect response does not constitute a sufficient basis for the inclusion of a behavior as a target in a treatment program. It indicates only a potential area of weakness, which then must be sampled more extensively to determine whether a genuine deficit exists. In addition, it is essential that a clinician consider the client's cultural and linguistic background when identifying potential therapy targets. Speech and language differences arising from dialect usage or a non-English native language do not constitute a communicative disorder. Refer to Chapter 12 for common characteristics of African American English, Spanish-influenced English, and Asian-influenced English.

This sampling is accomplished through the administration of **pretreatment baselines.** Baselines are clinician-designed measures that provide multiple opportunities for a client to demonstrate a given communicative behavior. A good rule of thumb is to include a minimum of 20 stimuli on each pretreatment baseline. The ratio of correct versus incorrect responses is calculated; the resulting percentage is used to determine whether the behavior should be selected as a therapy target. Many clinicians view a performance level of 75% accuracy or higher as an indication that the communication skill in question is not in need of remediation. Baseline measures that fall below the 75% accuracy level represent potential intervention targets. Ultimately, however, the selection of appropriate therapy targets relies heavily on clinical judgment. Some clinicians believe that behaviors that occur with at least 50% accuracy represent targets with the best potential for improvement. Other clinicians argue strongly that behaviors with much lower baseline rates of accuracy may be the most appropriate choices based on individual client characteristics (e.g., intelligibility level, age).

Often, clients present with several behaviors that qualify as candidates for remediation. For individuals who demonstrate a large number of errors, clinicians may choose a *broad* programming strategy that attacks as many targets as possible in a given time frame. Alternatively, clinicians may select a *deep* programming strategy for clients who demonstrate either relatively few or highly atypical errors. In addition, clinicians typically employ one of two basic approaches for choosing among potential targets: developmental/normative or client specific.

The Developmental/Normative Strategy

This strategy is based on known normative sequences of communicative behaviors in typically achieving individuals. Therapy targets are taught in the same general order as they emerge developmentally. When two or more potential targets are identified from baseline procedures, the earliest emerging behaviors are selected as the first therapy objectives. Following are two examples that illustrate use of the **developmental** strategy.

A 5-year-old child with an articulation disorder produces the following speech sound errors on baseline procedures:

- /p/ for /f/ as in ***p***inger for ***f***inger
- /t/ for /ʃ/ as in ***t***ip for ***sh***ip
- /d/ for /dʒ/ as in ***d***uice for ***j***uice
- /d/ for /b/ as in ***d***oat for ***b***oat

Use of the developmental strategy guides the clinician to select /b/ as the initial therapy target, because typically developing children demonstrate mastery of this sound earlier than the others. According to a developmental progression, /f/ is the next logical target, followed by /ʃ/ and /dʒ/.

A 4-year-old child with a language disorder exhibits the following grammatical errors on baseline procedures:

- Omission of present progressive tense, as in "The boy ***play***" for "The boy is play***ing***"
- Omission of the plural marker on regular nouns, as in "I see two ***bike***" for "I see two ***bikes***"
- Overgeneralization of regular past tense, as in "He ***runned*** down the street" for "He ***ran*** down the street"

Use of the developmental strategy dictates that the first target for therapy is the present progressive form (***is + verb + -ing***), because it is the earliest of the three structures to emerge. The plural marker is the next behavior to be targeted, followed by the regular past-tense form.

Note: With clients from different cultural/linguistic backgrounds, these grammatical forms may reflect a language difference rather than a language disorder. Therefore, intervention may not be warranted.

The developmental strategy tends to be most effective for articulation and language intervention with children. This strategy has less application for adults and disorders of voice and fluency.

A developmental strategy for target selection should be implemented with careful consideration of at least two factors. The sample population from which the norms were derived may have been too

small to permit valid generalization of the findings to other populations. Moreover, the characteristics of the standardization sample (e.g., ethnicity, gender, socioeconomic status) may differ significantly from those of an individual client. Consequently, it may be difficult to draw direct comparisons between the client's performance and the group norms.

The Client-Specific Strategy

Using the **client-specific** strategy, therapy targets are chosen based on an individual's specific needs rather than according to developmental norms. Relevant factors in the selection of treatment objectives include (a) the frequency with which a specific communicative behavior occurs in a client's daily activities; (b) the relative importance of a specific communicative behavior to the client, regardless of how often it occurs; and (c) the client's potential for mastery of a given communication skill. This last factor addresses the notion of *stimulability*, which is typically defined as the degree to which a client can approximate the correct production of an error pattern on imitation. Following are two examples that illustrate the use of the client-specific strategy.

Mr. Max Asquith, a 52-year-old computer programmer, demonstrates the following speech and language characteristics on pretreatment baseline procedures:

- Omission of final consonants such as /s/, /k/, and /θ/
- Distortion of vowels in all word positions
- Misarticulation of consonant blends, such as /br/, /pl/, /fl/, /ks/, and /skw/
- Omission of the copula forms (***is*** and ***are***) as in "He sad" for "He is sad"
- Difficulty with the accurate use of spatial, temporal, and numerical vocabulary
- Difficulty with subject-verb agreement, especially third-person singular constructions, as in "He ***drink*** milk" for "He ***drinks*** milk"

From the client-specific perspective, initial speech intervention targets could consist of /ks/ and /skw/, because these blends occur in the client's name and therefore constitute a high priority for him. An appropriate initial language target for this client would be vocabulary words that convey number concepts, because his position as a computer programmer relies heavily on the use of this terminology.

A 6-year-old child with an articulation disorder exhibits the following speech sound errors on baseline procedures:

- /θ/ for /s/ as in ***th***un for ***s***un
- /g/ for /d/ as in ***g***uck for ***d***uck
- /w/ for /l/ as in ***w***ight for ***l***ight
- /ʃ/ for /tʃ/ as in ***sh***ew for ***ch***ew

Using the client-specific strategy, the initial therapy target would be /s/, regardless of developmental considerations. The results of stimulability testing conducted during the diagnostic test indicated that this child's ability to imitate /s/ was superior to performance on the other error sounds. In addition, /s/ occurs far more frequently in English than /l/, /w/, and /tʃ/.

Unlike the developmental approach, a client-specific strategy can be implemented across a wide range of communication disorders with both pediatric and adult populations. In addition, a combination of the two strategies is often an effective way to approach therapy target selection for children with speech and language impairments.

Sequencing of Therapy Targets

Following therapy target selection and prioritization, programming involves the development of a logical sequence of steps that will be implemented to accomplish each objective. Three major factors determine the progression of the therapy sequence: *stimulus type*, *task mode*, and *response level*. The following outline presents a hierarchy of complexity for each of these factors.

Stimulus Type (nature of input used to elicit target responses)

- Direct physical manipulation
- Concrete symbols
  - Objects
  - Photographs/color pictures
  - Black-and-white line drawings
- Abstract symbols
  - Oral language
  - Written language

Task Mode (type of clinician support/scaffolding provided to obtain desired responses)

- Imitation
- Cue/prompt
- Spontaneous

Response Level (degree of difficulty of target responses)[1]

- Increase length and complexity of desired response
  - Isolation

[1]This response-level hierarchy pertains to oral responses only. Other response types, such as gesture, sign, and writing, may require alternative hierarchies of difficulty.

  - Syllable
  - Word
  - Carrier phrase (e.g., "I see a _____.")
  - Phrase
  - Sentence
  - Text (conversation, narration)
- Decrease latency (actual time) between stimulus presentation and client response

The sequencing process starts with a decision regarding the most appropriate level to begin training on each target behavior. Pretreatment baseline data for a given target are analyzed to determine the entry training level. Rules of thumb that can be used are as follows:

- If a client obtained a baseline score lower than 50% accuracy, training on that behavior should begin just below the level of difficulty of the baseline stimulus items.
- If the score was between 50% and 75% accuracy, training can begin at the same difficulty level as the baseline stimuli.

For example, a 5-year-old client scored the following on baseline measures for initial /s/: word level = 65%; carrier phrase level = 40%; and sentence level = 30%. In this example, therapy would begin at the word level of difficulty.

Adherence to these procedures generally will result in a progression of targets at the appropriate levels of difficulty. However, there may be occasions when a client does not perform as predicted; a chosen task turns out to be too difficult or too easy for the individual at this time. The clinician must recognize this situation when it occurs and immediately modify the task rather than persist with the original plan. This modification is known as **branching** and is achieved by increasing or decreasing the difficulty level by one step according to the therapy sequence hierarchies listed previously.

As the client's performance improves and initial training objectives are mastered, the stimulus type, task mode, and response level should be manipulated systematically to gradually increase the difficulty of therapy tasks until the final criterion is met for a given target. This criterion level is generally set at 90% accuracy or higher in everyday conversational interactions.

The following sample behavioral objectives illustrate the manipulation of each of the three factors:

Behavioral objective: The client will imitatively produce /s/ in the initial position of single words with 90% accuracy while naming 20 photographs.

Modified stimulus type: The client will imitatively produce /s/ in the initial position of single words with 90% accuracy while naming 20 *written* words.

Modified task mode: The client will *spontaneously* produce /s/ in the initial position of single words with 90% accuracy while naming 20 photographs.

Modified response level: The client will imitatively produce /s/ in the initial position of *words in carrier phrases* with 90% accuracy in response to 20 photographs.

Generalization/Carryover

A crucial consideration in programming involves a client's ability to transfer newly mastered communicative behaviors from the clinical setting to the everyday environment. Generalization is enhanced when intervention is provided in the most authentic, realistic contexts possible. Generalization should not be viewed as a distinct event that occurs only in the final phase of the therapy process. Rather, it is an integral part of programming that requires attention from the very beginning. Three main factors can influence the degree to which successful generalization occurs. A variety of **stimuli** (objects, pictures, questions) should be used during therapy activities to avoid tying learning to only a small set of specific stimulus items. Similarly, the clinician should vary the **physical environment** (location in room, location in building, real-world locations) in which therapy occurs as soon as a new target behavior has been established. This will minimize a client's natural tendency to associate target behaviors with a particular setting. Finally, clinicians should bear in mind that target behaviors frequently become attached to the individual who consistently reinforces them (i.e., the clinician). Therefore, it is important to vary the **audience** (familiar adult, sibling, unfamiliar adult) with whom therapy targets are practiced, to maximize the likelihood of successful generalization.

Termination of Therapy

It is difficult to definitively state the point at which intervention services are no longer warranted. At the current time, there are no valid empirical data that can be used to determine appropriate dismissal criteria for any particular communicative disorder. Therefore, it is beyond the scope of this book to indicate realistic time frames for the duration of intervention. General discharge guidelines used by many clinicians include (a) attainment of communication skills that are commensurate with a client's chronological/developmental age or premorbid status, (b) attainment of functional communication skills that permit a client to operate in the daily environment without significant handicap, and (c) lack of discernible progress persisting beyond a predetermined time period. The authors strongly believe that the establishment of reliable treatment outcome measures is critical in the current climate of professional accountability in both the public and private sectors. Within the past few years, the availability of efficacy data has increased significantly for a variety of communication disorders. This information is presented throughout the book in pertinent chapters.

Formulation of Behavioral Objectives

Once long-term goals and initial treatment levels have been identified, the clinician develops short-term objectives designed to culminate in the achievement of the selected long-term goals. (In education settings, student progress is measured through *benchmarks*, which are sets of skills required to achieve specific learning standards.) These objectives must be clearly delineated to ensure appropriate and effective intervention programming. A widely used approach to task design is the formulation of **behavioral objectives.** A behavioral objective is a statement that describes a specific target behavior in observable and measurable terms. There are three main components of a behavioral objective:

1. "Do" (action) statement
2. Condition
3. Criterion

The **"do" statement** identifies the specific action the client is expected to perform. Thus, behavioral objectives should contain verbs that denote observable activity; nonaction verbs should be avoided. List 1 contains examples of verbs that are appropriate for inclusion in behavioral objectives; list 2 is made up of verbs that are unacceptable because they refer to behaviors that cannot be observed.

List 1		List 2	
point	say	understand	know
label	write	think	appreciate
repeat	count	learn	remember
match	vocalize	believe	apply
name	ask	improve	comprehend
tell	elevate	discover	feel

An easy way to check the appropriateness of a verb is to ask yourself, "Will I be able to count (tally) how many times this behavior occurs?" (Mowrer, 1988). For example, consider the following pair of statements: (a) "to repeat single-syllable words" and (b) "to learn single-syllable words." Only the first is an appropriate "do" statement. Number of repetitions can be easily counted, whereas "learning" is a behavior that cannot be directly observed.

The **condition** portion of a behavioral objective identifies the situation in which the target behavior is to be performed. It specifies one or more of the following: when the behavior will occur, where it will be performed, in whose presence, or what materials and cues will be used to elicit the target. Following are common examples of condition statements:

- Given the clinician's model
- In response to a question from the teacher
- In the presence of three classmates
- During book report presentation
- Given a list of written words
- In the home environment
- During a job interview
- Using pictures
- During free play
- In the presence of other group therapy members
- During storybook reading time

Condition statements are critical parts of behavioral objectives, because clients may demonstrate adequate mastery of a communicative behavior in one situation and yet be completely unable to perform the same behavior under different conditions. For example, a client's ability to perform a

"do" statement, such as "Produce 1 minute of connected speech without disfluency," is likely to be quite different if the condition statement specifies "while talking to a familiar clinician" versus "while talking to a potential date."

The **criterion** specifies how well the target behavior must be performed for the objective to be achieved. It can be expressed in several ways, including percent correct, within a given time period, minimum number of correct responses, or maximum number of error responses. Criterion measures typically used in speech-language therapy are as follows:

- 90% accuracy
- 8 correct out of 10 trials
- Less than four errors over three consecutive sessions
- 80% accuracy over two consecutive sessions
- 90% agreement between clinician and client judgments
- Continuously over a 2-minute period

A well-formulated behavioral objective allows the client, as well as the clinician, to know exactly what the therapy target is, how it is to be accomplished, and what constitutes successful performance. It also is helpful to consider that unexpected changes can occur in caseloads. Clear behavioral objectives help ease the transition of care by clearly defining the focus of therapy for the next clinician. The following examples illustrate how to formulate behavioral objectives.

Example A

1. *"Do" statement:* Verbally segment words into syllables
2. *Condition:* Given a written list of 100 multisyllabic words
3. *Criterion:* With no more than four errors

Behavioral objective: The client will verbally segment 100 written multisyllabic words into their component syllables with no more than four errors.

Example B

1. *"Do" statement:* Use a slow rate of speech (four syllables per second)
2. *Condition:* Read single sentences
3. *Criterion:* With 85% accuracy or better over two consecutive sessions

Behavioral objective: The client will use a slow rate of speech (four syllables per second) with 85% accuracy or higher while reading single sentences over two consecutive sessions.

Example C

1. *"Do" statement:* Say /s/ in the initial position of single words
2. *Conditions:* Given the clinician's model
   Name pictures of animals
3. *Criterion:* With 90% accuracy

Behavioral objective: Given the clinician's model, the client will say /s/-initial single words with 90% accuracy while naming animal pictures.

In the authors' opinions, beginning clinicians tend to put too much focus on the "condition" aspect of behavioral objectives. While this aspect is important, the "do statement" should be the primary focus. In other words, the hierarchy of objectives should be built to move the client to higher levels of skill mastery rather than focusing on the incremental differences in teaching input strategies used by the clinician. A brief comparative example is listed in Table 1–1.

Additional examples of behavioral objectives and worksheets are provided in Appendixes 1–B and 1–C at the end of this chapter. Appendix 1–D contains a sample Daily Therapy Plan that illustrates the following components of a single session: behavioral objectives, client data, and clinician comments. (A reproducible copy of the Daily Therapy Plan form is provided in Appendix 1–E and on the companion website for this book, along with a sample form for documenting observation hours in Appendix 1–F.)

Table 1–1
Comparison of Behavioral Objective Hierarchies

Objective Hierarchy Focused on Clinician Input ("condition" aspect)	Objective Hierarchy Focused on Client Skill Level ("do statement" aspect)
Given a model, Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.	Given a model, Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.
Given maximal verbal and visual cues, Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.	Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.
Given visual cues, Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.	Given visual or verbal cues, Jeremiah will produce the regular past tense forms of verbs in simple sentences with 80% accuracy.
Given brief verbal cues, Jeremiah will produce the regular past tense forms of single verbs with 80% accuracy.	Jeremiah will produce regular past tense forms of verbs in spontaneous speech.

Theories of Learning

Different philosophies regarding the nature of human learning have led to the development of a variety of theories of how we learn information and skills. Different theories result in different intervention approaches and strategies. No single theory is applicable to all clients. To evaluate how well a model fits a specific client, clinicians may find it helpful to ask themselves the following questions:

- Has this approach been evaluated experimentally?
- Have the results been favorable?
- Has the approach been replicated across settings, clinicians, and clients?
- Is the model appropriate for my client (e.g., cognitive issues, cultural issues)?
- Can the environment be manipulated to implement procedures that are required for this approach (e.g., hospital versus school versus clinic)?
- Is my client improving?

Three of the major theoretical approaches to learning are the innateness/biological model, the behavioral model, and the constructivism model. An overview of each model is presented in the following sections. The behavioral model is discussed at length in this chapter, and the other models are incorporated into later chapters as they relate to specific communication disorders.

Innateness Theory/Biological Model (Chomsky, 1965; Fodor, 1975; Piaget, 1973)

The hypothesis is that human beings have an innate predisposition to acquire knowledge. Children use these innate capacities to develop concepts, ideas, and linguistic rules. Exposure to the environment serves as an "on–off" switch that activates the linguistic system.

When applied to clinical intervention:

- Clinical programming follows patterns of typical developmental sequences in areas such as cognition, language, and motor skills.
- Variations of the biological approach stress different facets of development.

For example, a cognitive model emphasizes the experiences necessary to activate cognitive capacities, whereas a linguistic model stresses teaching semantic-syntactic relationships.

Behavioral Model (Skinner, 1957)

The hypothesis is that children learn because their behaviors are selectively rewarded by significant others in their environment. This is the "tabula rasa" view and claims that human minds begin as blank slates and that the environment is the major determinant of learning. In this manner, children's responses to their environmental experiences are gradually shaped through feedback; desirable behaviors are reinforced and unwanted behaviors are faded.

When applied to clinical intervention:

- Clinical programming emphasizes development of functional behaviors without the assumption of a stage-wise progression or prerequisite behaviors.
- There is a heavy reliance on systematic application of behavior-modification techniques such as reinforcement, punishment, and extinction.

Constructivism/Interactionist/Integrative Model (Bruner, 1960; Piaget, 1973; Vygotsky, 1978)

The main hypothesis is that children are biologically predisposed to learn, and their experiences help them to construct knowledge (an integration of the two previous models). Learning is an active process in which children construct ideas and concepts through experience. Learners continuously test and refine knowledge through interactions with others, as well as their environment. This allows the learner to extract unique meaning from information and experiences.

When applied to clinical intervention:

- This model fosters client-centered learning in which learners play an active role.
- Clinical programming is designed as a reciprocal process between clients and clinicians and emphasizes intervention tailored to an individual's specific needs and abilities.
- Because learning is a combination of inborn capacity and extrinsic environmental factors, it can be affected by certain constraints (e.g., attention/memory deficits, severe disabilities). Some individuals with severe disabilities may learn primarily through behavioral principles that emphasize repetition and practice.

Another way of capturing the variation among theoretical approaches is through the lens of a "continuum of naturalness." According to Fey (1985), the continuum represents the degree to which intervention contexts reflect everyday communication situations and interactions (Figure 1–1). According to this view, intervention approaches fall along a continuum into one of three groups: *clinician directed, hybrid,* and *client centered*. In directive strategies, the clinician takes charge of all aspects of therapy, including the selection of goals, therapy materials, procedures, and the order of tasks and target responses to be elicited. Imitation and indirect modeling (response is not expected from the client) are two examples of clinician-directed techniques. Directive approaches are not

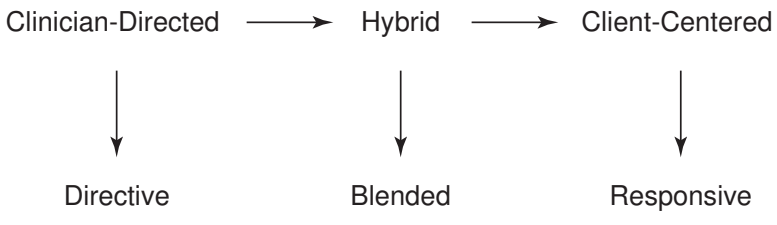

Figure 1–1
Continuum of Naturalness. *Sources:* Adapted from Fey (1985) and the American Speech-Language-Hearing Association (2015).

considered naturalistic because of the degree of clinician control and the absence of natural reciprocal communication.

Client-centered approaches emphasize the use of authentic communication in natural communication situations. In contrast to directive strategies, these approaches involve following the client's lead (waiting for the client to initiate a behavior), treating the client's verbal and nonverbal initiations as intentional communications, and providing natural responses. These approaches are based on the premise that individuals will attain therapy goals more quickly and transfer newly learned behaviors more spontaneously when they are taught in natural contexts using familiar activities. Examples of responsive strategies used with children are expansions, extensions, and recasts (see *Key Teaching Strategies* later in this chapter for definitions). For adult clients, two examples of client-centered techniques are functional communication (practicing communication activities of daily living, such as making a doctor's appointment) and conversational group therapy with other clients and the clinician. Both of these strategies permit clients to receive natural feedback on the relevance, intelligibility, and appropriateness of their turns from others in the group and the clinician.

Hybrid approaches represent a blending of clinician-directed and client-centered approaches. Hybrid approaches promote generalization by teaching new behaviors in natural environments using behavioral strategies. An example of a hybrid approach that is used with both children and adults is focused stimulation (concentrated exposure to a target form in a natural context, such as reading a book or restaurant menu).

The continuum of naturalness also applies to clients who use assistive technology (AT) to augment their speech production capabilities and those who rely completely on alternative modes of communication (AC), because speech is not a realistic communication mode. These accommodations are known collectively as AAC (augmentative and alternative communication).

Behavior Modification

The fundamental purpose of intervention is to either increase desired behavior or decrease unwanted behavior. (The term *behavior* refers to communication targets as well as a patient's degree of cooperation and attentiveness.) This is accomplished through application of the principles of behavior modification. **Behavior modification** is based on the theory of operant conditioning and involves the relationship among a stimulus, a response, and a consequent event (Skinner, 1957). A **stimulus** (or antecedent event) is an event that precedes and elicits a response. A **response** is the behavior exhibited by an individual on presentation of the stimulus. A **consequence** is an event that is contingent on and immediately follows the response. There are different types of consequent events. Consequences that increase the probability that a particular behavior will recur are known as **reinforcement.** Those that are designed to decrease the frequency of a behavior are termed **punishment.**

Types of Reinforcement

There are two basic types of reinforcement: **positive reinforcement** and **negative reinforcement.** Both types are used to increase the frequency of a target response.

Positive Reinforcement

Positive reinforcement is a rewarding event or condition that is presented contingent on the performance of a desired behavior.

Primary. These are contingent events to which a client reacts favorably due to the biological makeup or physiologic predisposition of the individual. Food is the most common example of a primary reinforcer. This type of reinforcer is very powerful and is used most effectively to establish new communicative behaviors (i.e., behaviors not previously present in the client's repertoire). Low-functioning clients often respond well to the basic nature of primary reinforcers. There are known disadvantages of primary reinforcement. First, it can be difficult to present the reinforcement immediately after every occurrence of the target behavior. In addition, this type of reinforcement is susceptible to **satiation;** that is, it loses its appeal as a reward if presented too often. Finally, skills that are taught using these contingent events are often difficult to generalize outside the therapy setting, because primary reinforcers do not occur naturally in the real world.

Secondary. These are contingent events that a client must be taught to perceive as rewarding. This category includes the following subtypes of reinforcers:

- **Social:** This group of reinforcers consists of events such as smiling, eye contact, and verbal praise. It is the most commonly used type of reinforcement in speech-language remediation programs. Social reinforcers are extremely easy to administer after each target response and generally do not disrupt the flow of a therapy session. In addition, this type of contingent response is not very susceptible to satiation (although it is not totally immune) and does occur in a client's natural daily environment.
- **Token:** This group of reinforcers consists of symbols or objects that are not perceived as valuable in and of themselves. However, the accrual of a specified number of these tokens will permit a client to obtain a previously agreed-on reward. Examples include stickers, check marks, chips, and point scores. These reinforcers are generally regarded as very powerful, because they are easy to administer contingent on each occurrence of a target behavior and are relatively resistant to satiation.
- **Performance feedback:** This category of reinforcers involves information that is given to a client regarding therapy performance and progress. Many individuals find it rewarding to receive information about the quality of their performance. It is not intended to function as praise and need not be presented verbally. Feedback regarding client performance can be delivered in various formats, including percentage data, frequency of occurrence graphs, numerical ratings, and biofeedback devices. Provision of this type of contingent event decreases a client's reliance on external sources of reinforcement by encouraging the development of intrinsic rewards (i.e., internal satisfaction and motivation) for mastering and maintaining a target behavior.

Negative Reinforcement

An unpleasant event/condition is removed contingent on the performance of a desired behavior.

Escape. This type of reinforcer requires the presence of a condition that the client perceives as aversive. Each performance of the target behavior relieves or terminates this aversive condition, thus increasing the probability that the specified behavior will recur. For example, a clinician might place her hands firmly over a child's hands and remove them only when the child exhibits the target behavior of imitatively producing /s/.

Avoidance. With this type of negative reinforcer, each performance of a target behavior prevents the occurrence of an *anticipated* aversive condition. This contingent event results in increased rates of performance of the desired response on subsequent occasions. For example, a clinician might inform a child that each imitative production of the target /s/ will prevent the imposition of hand restraint.

Use of negative reinforcement is relatively uncommon in the treatment of communication disorders because it repeatedly exposes clients to unpleasant or aversive situations. Use of positive reinforcement is the preferred method for increasing the frequency of desired responses. Positive reinforcement also can improve a client's motivational level and foster an effective interpersonal relationship between clinician and client.

Punishment

An event is presented contingent on the performance of an undesired behavior, to decrease the likelihood that the behavior will recur.

Type I. This involves the prompt presentation of an aversive consequence after each demonstration of an unwanted behavior. Examples of this consequence type that might be used in speech-language remediation programming include verbal utterances such as "No!," frowning, or the presentation of bursts of white noise.

Type II. This type of punishment requires withdrawal of a pleasant condition contingent on the demonstration of an unwanted behavior. Time-out and response cost are the two most common forms used in speech-language intervention. **Time-out** procedures involve the temporary isolation or removal of a client to an environment with limited or no opportunity to receive positive reinforcement. A modified version can be accomplished by turning the client's chair toward a blank wall in the therapy room or simply withholding direct eye contact from the client for short periods of time. **Response-cost** contingencies occur when previously earned positive reinforcers are deducted or taken back each time the undesirable behavior is demonstrated. This type of punishment can take various forms, including removal of stickers earned for previous correct responses or the partial subtraction of points already accrued by the client earlier in a therapy session. Sometimes, the clinician may choose to give a client several unearned tokens at the beginning of a session or task to institute response-cost procedures.

Several factors influence the effectiveness of punishment procedures (adapted from Hegde & Davis, 2010):

- Punishment should be delivered after *every* instance of the unwanted behavior.
- Punishment should be presented *immediately* following the undesirable behavior.
- Punishment should occur at the *earliest* signs of the unwanted behavior rather than waiting until the behavior is full blown.
- Punishment should not be programmed in graduated levels of intensity; this creates the potential for client habituation to the punishing stimulus, thus reducing its effectiveness.
- Punishment duration should be as brief as possible; lengthy periods of punishment call into question the strength of the chosen punishing stimulus.

Punishment procedures should be employed with caution in the therapy setting because there are undesirable effects associated with their use. These may include client anger, aggression, a reluctance to engage in any communicative behavior with the therapist, and the avoidance or actual termination of treatment.

If no contingent consequences occur following a targeted behavior, the frequency of that behavior will gradually decrease and ultimately disappear from a client's repertoire. This phenomenon is known as **extinction** and is used in therapy to eliminate behaviors that interfere with effective communication. Extinction does not occur immediately. In fact, a temporary increase in emission rate may be observed when the behavior is initially ignored. Behaviors that receive reinforcement on a continuous basis are most vulnerable to extinction, whereas those that are only periodically reinforced over a long period of time are least susceptible to this procedure. It is recommended that extinction procedures that are implemented for an undesired behavior (e.g., ignoring crying behavior) be combined with positive reinforcement for the converse behavior (e.g., rewarding noncrying behavior).

Positive Behavioral Interventions and Supports

Application of all the principles just discussed does not guarantee that a therapy session will run smoothly. The clinician should anticipate the possibility that a patient may not pay attention or cooperate with the session plan. This may occur due to a patient's developmental level of attention, boredom, frustration, lack of self-motivation, or a neurological behavior disorder. The clinician must now focus on **behavior management** in addition to behavior modification.

Currently, a system of positive behavioral interventions and supports (PBIS) is recommended for dealing with challenging behaviors. PBIS is a proactive approach that uses interpersonal and environmental strategies to minimize opportunities for problematic behavior and encourages more socially useful behaviors. Thus, PBIS shifts the emphasis of behavior management from a reactive, aversive approach to one that is more preventative, positive in nature, and prioritizes patient's success. Helpful information on this topic can be found at several websites, including the Center for Effective Collaboration and Practice (https://www.air.org/project/center-effective-collaboration-and-practice-cecp) and the Center on Positive Behavioral Interventions and Supports (https://www.pbis.org/). A PBIS plan can be developed for individuals, classrooms, school districts, or state-wide systems. These plans utilize a continuum of behavioral and instructional strategies to promote complementary improvements in academic and social learning.

A positive behavior support plan (see Appendix 1–H) generally identifies the following information:

- A description of the problematic behavior(s), an explanation of why it impedes learning, and an estimate of its severity (frequency, intensity, duration)
- Antecedent events that appear to trigger the behavior(s)
- The desired or alternative behavior(s)
- The intervention and supports (teaching strategies or environmental modifications) that will help the client achieve the desired behavior(s)

From the SLP's perspective, most behavior problems can be prevented if the therapy materials are creative, the activities are interesting, and the session is well paced.

Schedules of Reinforcement

Once the appropriate type of reinforcer has been selected for a given client, the clinician must decide how often the reinforcer will be delivered. The two main schedules of reinforcement are *continuous* and *intermittent*.

Continuous Reinforcement

A reinforcer is presented after *every* correct performance of a target behavior. This schedule, sometimes characterized as "dense," tends to generate a very high rate of response. It is most commonly used to shape and establish new communication behaviors. It also can be used when transitioning an already established skill from one level of difficulty to the next (e.g., from word to sentence level). Use of a **continuous** schedule reduces the risk that a client's production of a target behavior will "drift" from the intended response. The primary disadvantage of this schedule is that behaviors reinforced at such a high density level are very susceptible to extinction. It also may interfere with a client's production of a steady flow of responses.

Intermittent Reinforcement

With this schedule, only some occurrences of a correct response are followed by a reinforcer. **Intermittent** reinforcement, often termed *lower density*, is most effective in strengthening responses that have been previously established. This reinforcement schedule reduces the probability of satiation during treatment and results in behaviors that are extremely resistant to extinction. The four types of intermittent schedules are as follows.

Fixed Ratio. A specific number of correct responses must be exhibited before a reinforcer is delivered (e.g., every two responses, every 10 responses, every 35 responses). The required number is determined by the clinician and remains unchanged throughout a therapy task. This reinforcement schedule generally elicits a high rate of response.

Fixed Interval. Reinforcement is delivered for the first correct response made after a predetermined time period has elapsed (e.g., every 3 minutes, every 50 seconds). The main disadvantage of this schedule is that response rate tends to decline dramatically immediately following presentation of the reinforcer; therefore, a fixed interval schedule may be an inefficient use of therapy time.

Variable Ratio. The number of correct responses required for the delivery of a reinforcer varies from trial to trial according to a predetermined pattern set by the clinician. For example, the pattern might be as follows: after the third response, then after the tenth response, then after the fourth response, then after the seventh response. This ratio, represented as variable ratio (VR): 3, 10, 4, 7, would be repeated throughout a therapy task. This schedule tends to be more effective than a fixed ratio schedule, because the client cannot predict the seemingly random pattern of delivery and anticipates that every response has an equal chance of being reinforced.

Variable Interval. This schedule is similar to a VR except that the clinician varies the time period required for reinforcement delivery rather than the number of responses. For example, one variable interval (VI) pattern might be as follows: after 3 minutes, then after 10 minutes, then after 1 minute,

then after 4 minutes. This pattern, represented as VI: 3, 10, 1, 4, would be repeated throughout a therapy task.

In general practice, continuous reinforcement is used to establish a new target behavior. Intermittent schedules are introduced in subsequent stages of therapy to promote maintenance and generalization. One rule of thumb is to switch to lower-density intermittent schedules when the target response rate increases 30% to 50% over the original baseline measures.

Key Teaching/Scaffolding Strategies

Several basic training techniques are commonly used in intervention programs to facilitate the acquisition of communication behaviors. The following strategies are used for a variety of purposes and are implemented at different points throughout the remediation process:

- *Direct modeling:* Clinician demonstrates a specific behavior to provide an exemplar for the client to imitate.
- *Indirect modeling:* Clinician demonstrates a specific behavior frequently to expose a client to numerous well-formed examples of the target behavior.
- *Shaping by successive approximation:* A target behavior is broken down into small components and taught in an ascending sequence of difficulty.
- *Prompts:* Clinician provides additional verbal or nonverbal cues to facilitate a client's production of a correct response.
- *Fading:* Stimulus or consequence manipulations (e.g., modeling, prompting, reinforcement) are reduced in gradual steps while maintaining the target response.
- *Expansion:* Clinician reformulates a client's utterance into a more mature or complete version.
- *Recast:* Clinician reformulates a client's utterance into a different sentence type.
- *Negative practice:* The client is required to intentionally produce a target behavior using a habitual error pattern. This procedure is generally employed to facilitate learning by highlighting the contrast between the error pattern and the desired response.
- *Target-specific feedback:* The clinician provides information regarding the accuracy or inaccuracy of a client's response relative to the specific target behavior. This type of feedback contrasts with generalized feedback or consequences.

Direct modeling is the teaching technique most frequently used in the early stages of therapy. It is also employed whenever a target behavior is shifted to a higher level of response difficulty, because this type of modeling provides the maximum amount of clinician support. Typically, clinicians augment direct models with a variety of visual and verbal cues to establish correct responses at the level of imitation. Direct modeling also minimizes the likelihood that a client will produce his or her customary error response. Initially, a direct model is provided before each client response.

Once a target behavior is established, continuous modeling should be eliminated, because it does not facilitate strengthening or maintaining a target response. Direct modeling can be terminated abruptly or faded gradually. Gradual **fading** can be accomplished in at least two ways. One requires a client to produce multiple imitations for each model demonstrated by the clinician (e.g., three

imitative responses are required after each direct model). The second method involves the progressive reduction of the length of the behavior modeled by the clinician. For example, the direct model of "The boy is running" is shortened first to "The boy is . . . ," and then to "The boy . . . ," while the client's imitative response in all three cases is the production of the complete target sentence, "The boy is running." In general, fading procedures can be initiated once a client is able to produce at least five consecutive correct imitative responses.

In some cases, the stimulus alone is not sufficient to elicit the desired response. **Prompts** are extra verbal and nonverbal cues designed to help a client produce the target behavior. Prompts can be categorized as attentional or instructional. **Attentional** cues improve performance by focusing a client's concentration on the task at hand. Examples include "Look at me," "Watch my mouth," "Remember to pay attention," and "Are you ready?" Clinicians also can draw attention to a target by modeling the behavior with exaggerated loudness and duration. **Instructional** cues provide information that is directly related to the specific target behavior being attempted. This may include verbal prompts such as "Remember to elevate your tongue tip at the beginning of each word," "Don't forget to segment your words into syllables if you get stuck," or "Be sure that your answer has at least three words in it." Instructional cues also can be nonverbal, such as an index card with the name of the targeted fluency technique written on it, a gesture to indicate that voice loudness should be increased, or drawings that represent the grammatical categories of subject, verb, and object.

Some target behaviors are too complex for a client to perform successfully, and even the provision of a direct model accompanied by prompts may not elicit a correct imitative response. In such instances, procedures for **shaping by successive approximation** are usually instituted. The simplification of a difficult target into a series of more manageable tasks fosters client success at each step. Each successive step moves progressively closer to the final form of the desired response.

Target-specific feedback is a technique that is useful throughout all phases of the therapy process. It serves three main functions. First, clients benefit from feedback that consists of more than simple accuracy judgments regarding their responses. Target-specific feedback provides precise information about why responses are correct or incorrect (e.g., "Good, I didn't see your tongue peeking out when you said, 'Soup'," rather than simply "Good job!"). Second, use of this strategy tends to maintain a client's awareness of the exact response being targeted without the need for continuous re-instruction during a therapy activity. Finally, this type of feedback assists clinicians in maintaining client focus on the communication behavior being targeted by a given therapy activity. It is a particularly helpful strategy for beginning clinicians who may get too involved in the details or rules of an activity and lose sight of the true purpose of the therapy task.

Negative practice is a strategy intended to enhance a client's awareness of the salient characteristics of his or her error pattern. It is used primarily to illustrate the differences between an "old" response and the intended target. This procedure generally is implemented only after a client demonstrates the ability to produce a given target consistently at the level of imitation. Negative practice is a powerful technique that is best used on a short-term basis. Devoting a significant amount of therapy to client practice on incorrect responses is of questionable value.

In addition to the specific training techniques just discussed, clinicians frequently use the general stimulation procedures of **indirect modeling**, **expansion**, and **recasting**. These strategies can be employed at any stage in the therapy process. They provide a client with increased exposure to instances of desirable speech, language, or communication behaviors but are not intended to elicit immediate specific responses. For example, a clinician working with a client on the production of /s/ may implement indirect modeling by including a significant number of /s/-initial words in her off-task comments throughout a session. Expansions are used almost exclusively in language therapy programs and may involve the clinician's interpretation of the client's intended meaning (e.g.,

Client: "Daddy cookie"; Clinician: "Yes, Daddy is eating the cookie."). An example of recasting is changing the client's declarative statement to an interrogative form (e.g., Client: "Doggie is barking"; Clinician: "Is the doggie barking?").

Homework

Once a target communication behavior has been established in therapy using the teaching strategies specified in the previous section, **homework assignments** can be given to strengthen the response and facilitate its generalization outside the clinical setting. Certain guidelines for the design and implementation of homework can increase its effectiveness as an intervention strategy:

- The purpose of homework is to provide the client with practice on an *existing* skill rather than teaching something new. Therefore, it should focus only on targets that have been solidly established in therapy.
- Homework should be instituted only after a client has demonstrated a basic ability to accurately evaluate his or her performance on a given target.
- To increase the likelihood that homework will be completed, it should be assigned in amounts that are perceived as manageable by a client or family. For example, activities that involve a daily commitment of 5 to 10 minutes may be more effective than those that require 30 to 45 minutes once a week.
- Homework should be assigned on a regular basis throughout the course of therapy.
- Homework assignments should always be accompanied by simple written instructions that specify exactly what the client is expected to do.
- Review and check homework during the initial portion of the next therapy session.
- Homework activities can be supervised by a variety of individuals (e.g., teacher, spouse, babysitter).

Session Design

Once therapy targets have been appropriately programmed, the clinician must determine the organizational flow of each therapy session. The first decision to be made is whether treatment will be delivered in an individual or group setting. **Session design** for both of these formats requires consideration of the basic factors discussed in the sections that follow. Elements that are specific to design for a group session are addressed later in this chapter.

Basic Training Protocol

Regardless of disorder type or severity level, speech, language, and communication therapy is carried out using the same basic training protocol. This protocol is the distillation of the therapy process and consists of the following five steps (see Table 1–2 for guidelines on giving instructions):

1. Clinician presents stimulus.
2. Clinician waits for the client to respond.

Table 1–2
Guidelines for Effective Instructions

• Instructions should be worded as clearly and concisely as possible. Long, complicated explanations can be counterproductive to a client's understanding of the intended task. (Beginning clinicians may benefit from writing an actual script of instructions prior to a session.)
• State instructions in the declarative form. Directions that are presented indirectly in the form of requests (e.g., "Would you say /s/ for me?") are pragmatically confusing and understandably may elicit negative replies (e.g., "No" or "I don't want to.").
• Be sure to allow clients sufficient time to respond before repeating the instructions. Resist the temptation to repeat instructions or stimuli too quickly, because individuals with communication impairments often require increased processing time. Waiting is a strategy that may facilitate correct responses more consistently than repetition of instructions.
• If it becomes necessary to readminister instructions, try to avoid significant reformulation of the original wording. This is particularly important with clients who have language disorders, because rewording tends to become a source of confusion rather than clarification.
• The main emphasis of instructions should always be on the targeted behavior rather than on the details of the activity or game being used to elicit the behavior. (This aspect poses particular difficulty for beginning clinicians, who must learn to create the appropriate balance between the amount of time spent explaining elaborate therapy activities versus working on target behaviors.)

3. Clinician presents appropriate consequent event.
4. Clinician records response.
5. Clinician removes stimulus (as appropriate).

This sequence represents a single trial for a given target and is repeated continuously throughout a therapy session. The acceptable latency period between stimulus presentation and client response may vary according to disorder type as well as individual client characteristics. It is critical that the consequent event (reinforcement/punishment) follow the response immediately, so that the contingent relationship between the two is obvious to the client. For this reason, data recording should not delay the delivery of the consequence.

Task Order

Another important component of session design is the order in which tasks are conducted. Appropriate task order enhances the overall effectiveness of treatment. An ideal progression follows an "easy–hard–easy" pattern. A session should begin with therapy tasks with which a client can be relatively successful without excessive expenditure of effort. This could entail a review of completed homework assignments or nearly mastered targets from a previous session. The central portion of the session should consist of behavioral objectives that are most challenging to the client. The final segment should return to tasks that elicit fairly accurate performance with minimal effort. This task order increases the likelihood that a given therapy session will begin and end on a positive note. This

success-oriented session design promotes high levels of client motivation even during difficult stages of the therapy process.

Dynamics of Therapy

Thus far, this chapter has focused on the technical aspects of intervention. However, the therapy process involves another critical dimension: the dynamics of therapy. Therapy dynamics contribute significantly to session design and include factors such as the clinician–client relationship, work efficiency/pace, materials, and proxemics.

The Clinician–Client Relationship

The nature of the clinician–client relationship influences the success of a therapy program as powerfully as the technical design. One of the most important aspects of the therapeutic relationship is the professional personality of the clinician. Clearly, personal attributes among clinicians vary tremendously. In general, a calm, positive, and firm demeanor is most effective in enhancing clinician–client interaction.

Some therapists consistently generate better client outcomes than other clinicians regardless of the intervention approach used. The literature on treatment efficacy tends to focus on differences between specific intervention methods/techniques. One frequently overlooked factor in these outcome studies is "therapist effects." In other words, what is the contribution of therapist skill in establishing therapeutic relationship to differences in treatment outcomes? Wampold (2015) identifies the *therapeutic alliance between clinician and client* as an important concept in understanding the degree to which client experiences success in treatment. It is the clinician's responsibility to establish this relationship, which consists of three main elements: (a) creating the interpersonal bond between clinician and client, (b) ensuring alignment between clinician and client/family regarding the long-term goals of treatment, and (c) ensuring alignment between clinician and client/family regarding the nature of tasks necessary to achieve these goals. This therapeutic alliance enhances the likelihood of a more positive treatment outcome.

In practice, clinicians need to maintain a conscious awareness of their body language, intonation patterns, and social speaking style to prevent client confusion. Body language and voice intonation patterns must be monitored to ensure that they do not conflict with accompanying verbal messages. For example, the message, "You're doing a great job!" may not be perceived by a client as a positive remark if it is delivered without eye contact and in an apathetic tone of voice. Further, the use of overly diplomatic forms of speech should be minimized because they may contradict the message that a clinician intends to convey. For example, beginning clinicians who are reluctant to risk hurting a client's feelings may react to an incorrect response with a big smile, while saying, "Good! Let's try that again!" rather than clearly stating that the attempt was inaccurate.

In any interpersonal interaction, there may be a mismatch between an intended message and the perceived message. A persistent mismatch can have a negative influence on the therapeutic alliance. It is the responsibility of clinicians to adapt their interactive styles (comprising energy level, humor, talkativeness, and vocabulary) to accommodate the comfort level of each client rather than the other way around. It is also important to remember that clients can be easily overwhelmed and intimidated by the excessive use of unfamiliar technical jargon. To maintain a professional, yet warm atmosphere, clinicians need to determine on a case-by-case basis the appropriate balance between their use of technical versus more colloquial language forms.

Moreover, clinicians must establish the parameters of the therapeutic relationship from the very first session. This entails an explicit definition of the roles and responsibilities of each partner. This will clearly differentiate the nature of a professional relationship from a personal one. At the beginning of a therapeutic relationship, clients do not always feel comfortable volunteering information about their goals for therapy. Clinicians should make a point of asking clients about their expectations. Whenever possible, clients (and their families) should be active participants in the target selection phase of therapy, by identifying the communication behaviors that are the highest priorities in their daily lives. Clinicians can minimize client anxiety and confusion by providing a clear rationale regarding the purpose of each activity implemented in a therapy session. Intervention tends to be less effective if clients do not understand why they are being asked to perform particular tasks. Further, difficult client questions should be addressed in a manner that allows the clinician to maintain credibility. For instance, instead of responding with "I haven't had that course yet," it is more effective to simply say, "I don't know. I'll do some research on the topic and give you the information at our next session."

Clinicians need to create a balance between responding to and ignoring off-task comments made by clients. Sometimes clients genuinely need to talk about topics that are not part of the clinician's original lesson plan but are important to address (e.g., questions regarding lack of progress, comments concerning family reactions to new communicative behaviors). At other times, off-task comments are meant simply to distract the clinician from a therapy task that a client perceives as difficult or boring.

Ultimately, the success of any therapeutic relationship will be influenced by the clinician's recognition that it is the client, and not merely the disorder, that is the main focus of treatment.

Work Efficiency/Pace

This aspect of session dynamics entails consideration of two main issues. First, every session should be efficiently designed to provide a client with the maximum number of opportunities to practice target behaviors. Second, the pace of each session must be geared to the learning rates and styles of individual clients. A pace that is either too fast or too slow may cause frustration for a client and interfere with successful performance.

Materials

The materials selected for therapy must be appropriate for a client's age, developmental status, language level, gender, cultural background, and linguistic needs. In addition to these criteria, it is important to consider the interest value of therapy materials based on individual client preferences. For example, when selecting materials for a 12-year-old boy with a learning disability who reads at a second-grade level, the clinician must ensure that any stories used in therapy are sufficiently interesting for a preteen, yet written at a manageable difficulty level. Finally, clinicians should avoid the use of time-consuming and complicated materials or activities. Materials that require lengthy physical manipulation (e.g., cutting, gluing, intricate board games) may negatively affect the efficiency of a session by reducing the amount of time available for client responses.

Proxemics

For the purposes of the present discussion, **proxemics** involves the spatial arrangement or relationships between the clinician and client(s) within the therapy setting. Proxemics should take into

account the spatial factors that affect any social interaction. One of the most important considerations for SLPs is to determine a socially acceptable (and, in some cases, culturally acceptable) physical proximity between the clinician and the client. Seating arrangements that are extremely far apart may be perceived by the client as an indication of aloofness or lack of interest on the part of the clinician. In contrast, clients may be very uncomfortable with clinicians who sit too close and invade their personal space. Clinicians may deliberately use proxemics as a strategy to influence client behavior (e.g., reducing impulsive or distractible behavior by sitting very close to a child).

In addition to having social implications, proxemics also influence the effective implementation of certain therapy procedures. For example, monitoring the degree of tongue protrusion for an interdental lisp (i.e., /θ/ for /s/) will be difficult if the clinician cannot see the client's face. Alternatively, a face-to-face seating arrangement may interfere with an activity that requires the clinician and client to read from the same stimulus sheet. Seating arrangements should always be selected based on the goal of a given therapy objective. The three most common sitting arrangements (chair or floor) for conducting individualized therapy are face to face, side by side, and side by side in front of a mirror.

Group Therapy

The use of a group therapy model requires attention to several unique aspects of session design that are not pertinent to individual treatment. Unfortunately, there is a paucity of information on group intervention and even less empirical study of this process in the field of speech-language pathology. However, group therapy is critical to any discussion of session design, because it is a frequently used service delivery mode—in fact, it is becoming the dominant model in many therapeutic settings (such as the public schools). Therefore, group therapy is treated as a separate topic in this chapter to provide clinicians with fundamental information on the effective design and execution of these programs.

Clinicians implement a group intervention model for a variety of purposes. Some groups are intended to teach new communication skills at introductory levels. Others are designed primarily to provide clients with practice on skills previously established in individual sessions. Still others have socialization, self-help, or counseling as their main purpose.

The stage of therapy at which group intervention is initiated also varies. Some clinicians employ a group model from the very beginning of the therapy process; others use it mainly in the final stages to facilitate carryover. In many cases, a combination of individual and group formats is used throughout all stages of the therapy process.

Group Size

The size of a group will vary depending on its purpose, the setting, and client age. Groups whose primary purpose is to teach new skills tend to be smaller than those geared for the generalization of previously mastered skills. Group size is also determined by the availability of clients in different service delivery settings. Institutions such as metropolitan hospitals and public schools lend themselves more readily to the formation of larger therapy groups than do private practices or small clinics.

Based on the available literature, the recommended group size for children is approximately two to six members (Blosser & Neidecker, 2002; Gordon-Brannon & Weiss, 2007). Guidelines for adults differ. For example, Cooper and Cooper (2003) recommend 7 to 12 members for adult stuttering groups. They also caution that groups of fewer than five clients are undesirable for several reasons: (a) personality characteristics of individual group members are more prominent, (b) the absence of a single member can interfere with the group's ability to function, and (c) small groups are more susceptible to domination by a single member.