TREATMENT RESOURCE MANUAL

for Speech-Language Pathology

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❒ CHAPTER 1 ❒

The Essential Ingredients of Good Therapy: Basic Skills

PHILOSOPHY

In the field of communication disorders, the domains of research and clinical practice frequently are 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. Therefore, it is our view that intervention, like research, should be based on the principles of the scientific method. Both research and intervention involve:

- ❒ 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

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 completed when mastery of these behaviors is achieved. Periodic follow-up is performed to monitor retention and stability of the newly acquired behaviors. Standards for professional and ethical behavior in the field of speech-language pathology are delineated by the Code of Ethics developed by the American Speech-Language-Hearing Association (see Appendix A).

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

- ❒ **Programming:** The selection, sequencing, and generalization of therapy targets.
- ❒ **Behavior Modification:** The systematic use of specific stimulus-response-consequence procedures.
- ❒ **Key Teaching Strategies:** The use of basic training techniques to facilitate learning.

- ❒ **Session Design:** The organization and implementation of therapy sessions, including interpersonal dynamics.
- ❒ **Data Collection:** The 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 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. The reader is referred to Appendix B at the end of the book for common characteristics of Black 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 and 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 may represent potential intervention targets. Ultimately, however, the selection of appropriate therapy targets relies heavily on clinical judgment. Some clinicians believe that behaviors which 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, etc.). Often, clients present with several behaviors that qualify as candidates for remediation. In such instances, clinicians typically employ one of two basic strategies to choose among the potential targets: normative or client-specific.

The Normative Strategy

The **normative** strategy is based on known developmental sequences of communicative behaviors in normally 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 behavior(s) that occur(s) earliest developmentally would be selected as the first therapy objective(s). Two examples that illustrate use of the normative strategy are presented below:

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

1. /p/ for /f/ as in *p*inger for *f*inger
2. /t/ for /ʃ/ as in *t*ip for *sh*ip
3. /d/ for /dʒ/ as in duice for juice
4. /d/ for /b/ as in *d*oat for *b*oat

Use of the normative strategy guides the clinician to select /b/ as the initial therapy target because normally 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:

1. omission of present progressive tense as in "The boy *play*" for "The boy *is* play*ing*"
2. omission of the plural marker on regular nouns as in "I see two *bike*" for "I see two *bikes*"

3. overgeneralization of regular past tense as in "He *runned* down the street" for "He *ran* down the street"

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

The normative 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 normative 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. Moveover, 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. Two examples that illustrate the use of the client-specific strategy are presented below.

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

1. omission of final consonants such as /s/, /k/, and /θ/
2. distortion of vowels in all word positions
3. misarticulation of consonant blends such as /br/, /pl/, /fl/, /ks/, and /skw/
4. omission of the copula forms (*is* and *are*) as in "He sad" for "He *is* sad"
5. difficulty with the accurate use of spatial, temporal, and numerical vocabulary
6. 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:

1. /θ/ for /s/ as in *th*un for *s*un
2. /g/ for /d/ as in *g*uck for *d*uck
3. /w/ for /l/ as in *w*ight for *l*ight
4. /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 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 /g/, /w/, and /tʃ/.

Unlike the normative 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 outline below presents a hierarchy of complexity for each of these factors.

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

1. direct physical manipulation
2. concrete symbols
   - objects
   - photographs/colored pictures
   - black and white line drawings
3. abstract symbols
   - oral language
   - written language

Task Mode (amount of clinician support provided to obtain desired responses)

1. imitation
2. cue/prompt
3. spontaneous

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

1. increase length and complexity of desired response
   - isolation
   - syllable
   - word
   - carrier phrase (e.g., "I see a _____.")
   - phrase
   - sentence
   - text (conversation, narration)
2. 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. One rule of thumb that can be used is:

> If a client obtained a baseline score lower than 50% accuracy, training on that behavior should begin just below the level of difficulty that constituted 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 persisting 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 above.

As the client's performance improves and initial training objectives are mastered, the stimulus type, task mode, and response level should be

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

manipulated systematically to gradually increase the difficulty of therapy tasks until final criterion is met for a given target. This criterion level is generally set at 90% accuracy or better in everyday conversational interactions.

Generalization/Carry-over

A crucial consideration in programming involves a client's ability to transfer newly mastered communicative behaviors from the clinical setting to the natural environment. 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 learning that is tied 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 duration of intervention. General discharge guidelines used by many clinicians include: (a) attainment of communication skills that are commensurate with a client's chronological or developmental age; (b) attainment of functional communication skills which permit a client to operate in the daily environment without significant handicap; and (c) lack of discernable progress persisting beyond a predetermined time period. The authors strongly believe that, in the current climate of professional accountability in both the public and private sectors, establishment of reliable treatment outcome measures is critical.

Formulation of Behavioral Objectives

Once long-term goals and initial treatment levels have been identified, the clinician develops short-term objectives which are designed to culminate in

the achievement of the selected long-term goals. 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, 1982). For example, consider the following: (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. Common examples of condition statements are listed below:

Given the clinician's model

In response to a question

In the presence of three strangers

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

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 "talking to a familiar clinician" versus "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. A list of criterion measures typically used in speech-language therapy 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. The following examples illustrate how to formulate behavioral objectives.

Example A

1. Do Statement: Verbally segment words into syllables
2. Conditions: 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 4 errors.

Example B

1. Do Statement: Use a slow rate of speech (four syllables per second)
2. Conditions: Reading single sentences
3. Criterion: With 85% accuracy or better over two consecutive sessions.

Behavioral Objective: The client will use a slow rate of speech (4 syllables per second) with 85% accuracy or better 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.

Additional examples of behavioral objectives and worksheets are provided in Appendix 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).

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 client'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 between 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

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

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 primary reinforcers because of the basic nature of these contingencies. 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 not totally immune) and does occur in a client's natural daily environment.

Token: This group of reinforcers consists of symbols/objects which 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, checkmarks, 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/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 which 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 rein-

forcers 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 in order to institute response cost procedures.

Several factors influence the effectiveness of punishment procedures (adapted from Hegde, 1985):

- ❒ 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 which are implemented for an undesired behavior (e.g., ignoring crying behavior) be combined with positive reinforcement for the converse behavior (i.e., rewarding noncrying behavior).

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

tion to behavior modification. In most cases, behavior problems can be managed through the implementation of an additional reinforcement system that: (a) addresses only cooperative/attending behaviors and (b) is distinctly separate from the reinforcers delivered for speech-language responses. Most behavior problems can be prevented if the therapy materials are creative, 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 described below.

FIXED RATIO. A specific number of correct responses must be exhibited before a reinforcer is delivered (e.g., every 2 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 with this schedule is that

response rate tends to decline dramatically immediately following presentation of the reinforcer, and therefore a fixed interval schedule may be an inefficient use of therapy time.

VARIABLE RATIO (VR). 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: after the 3rd response; then after the 10th response; then after the 4th response; then after the 7th response. This pattern of ratios is represented as VR: 3,10,4,7 and 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 (VI). This schedule is similar to a variable ratio except that the clinician varies the time period required for reinforcement delivery rather than the number of responses. For example, one interval pattern might be: after 3 minutes; then after 10 seconds; then after 1 minute; then after 4 minutes. This pattern is represented as VI: 3,.6,1,4, and 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 30–50% over the original baseline measures.

KEY TEACHING STRATEGIES

Several basic training techniques are commonly used in intervention programs to facilitate the acquisition of communication behaviors. These strategies are utilized to accomplish 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.

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/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 clinician model (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," "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 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-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 job!" versus "Good, I didn't see your tongue peeking out when you said, 'Soup'," respectively). Second, use of this strategy tends to maintain a client's awareness of the exact response being targeted without the need for continuous reinstruction 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 discussed above, clinicians frequently use the general stimulation procedures of **indirect modeling** and **expansion**. 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").

Once a target communication behavior has been established in therapy using the techniques specified above, **homework assignments** can be given to strengthen the response and facilitate its generalization outside the clinical setting. There are certain guidelines for the design and implementation of homework that 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 which involve a daily commitment of 5–10 minutes may be more effective than those that require 30–45 minutes once a week.
- ❒ Homework should be assigned on a regular basis throughout the course of therapy.
- ❒ Homework assignments always should be accompanied by simple written instructions that specify exactly what the client is expected to do.

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 below. Elements that are specific to a group design will be addressed later in this chapter.

Basic Training Protocol

Regardless of disorder type or severity level, all speech and language 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:

(Clinician gives instructions)[2]

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

[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 (i.e., "Would you say /s/ for me?") are pragmatically confusing and understandably may elicit negative replies (i.e., "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 communicatively impaired individuals 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 are language disordered as rewording tends to become a source of confusion rather than clarification.
- ❒ The main emphasis of instructions **always** should be on the targeted behavior rather than on the details of the activity/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.)

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 which 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.

Further, clinicians need to maintain a conscious awareness of their body language, intonation patterns, and social speaking style in order 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 polite forms of speech should be minimized because they may contradict the message that a clinician actually 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.

It is the responsibility of clinicians to adapt their interactive styles (e.g., energy level, humor, talkativeness, 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 the appropriate balance between their use of technical versus more colloquial language forms on a case-by-case basis.

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 which 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, and gender. 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 learning disabled boy who reads at a second-grade level, the clinician must ensure that any stories used in therapy be sufficiently interesting for a preteen, yet be written at a manageable difficulty level. Finally, clinicians should avoid the use of time-consuming and complicated materials

or activities. Materials which require lengthy physical manipulation (e.g., cutting, gluing, intricate board games) may negatively impact 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 which affect any social interaction. One of the most important considerations for speech-language pathologists is to determine/estimate 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 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. On the other hand, 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 always should 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 and, in fact, 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 to accomplish a variety of purposes. Some groups are intended to teach new communication skills at introductory levels. Others are designed primarily to provide clients with

- ❒ clients with shy or reticent personalities may be reluctant to participate
- ❒ one or two members may become dominant and monopolize the group
- ❒ the group's rate of progress may be too fast for the slowest members and too slow for the most advanced members.

Perhaps, the heart of successful group therapy is a clinician's ability to establish and maintain a true group dynamic. Otherwise, the sessions merely consist of multiple clients receiving individualized treatment in a group room.

SERVICE DELIVERY MODELS IN EDUCATIONAL SETTINGS

The traditional approach to providing speech-language intervention has been a pull-out model in which a child leaves the classroom and receives therapy in either individual or group sessions. In recent years, there has been a growing trend toward the provision of therapy in a wider variety of service delivery models. Four of the most commonly used models are described below.

Consultative: The clinician acts as a resource for professionals who work directly with a child and parents to help solve problems related the child's communicative deficit. In this model, the agent of intervention is someone other than the SLP.

Collaborative: The clinician and the classroom teacher share the responsibility for developing speech-language goals for a child and integrating them into the academic curriculum. The goals are implemented primarily by the classroom teacher, although the SLP may occasionally work directly with the child.

Team Teaching: The clinician and the teacher share the responsibility for classroom instruction on a regular basis. In this model, a comprehensive program with strong language and academic components can be provided within the context of the classroom.

Self-Contained: The clinician alone serves as the classroom teacher and is responsible for developing and implementing all aspects of the curriculum. Classroom activities in all topic areas are specifically designed to promote the development of language skills.

Ultimately, the selection of a particular service delivery model is determined by: (a) the needs of a child, (b) the size and composition of a clinician's caseload, and (c) scheduling constraints.

DATA COLLECTION

Speech-language pathologists are accountable for the efficiency as well as the effectiveness of the intervention services they provide. Clients and their families invest valuable time, resources, and effort in the therapy process. The primary mechanism for assuring clinician accountability is data collection. Information obtained from the data collection process serves two important functions. It allows the clinician to monitor a client's progress from one session to the next. Data collection systems also can be designed to permit documentation of the efficacy of a given treatment strategy.

Recording Session Data

Data recording is greatly facilitated by behavioral objectives that are written properly (i.e., in specific and measurable terms). In most cases, data collection difficulties occur because objectives are written in a vague and unclear manner. Guidelines for a comprehensive approach to data collection are presented below.

1. Appropriate data recording sheets should be designed or selected prior to the onset of a therapy session. (Samples of reproducible data forms and instructions for their use are included at the end of this chapter.)
2. The notation system should provide the type of information that is most relevant to a specific client or disorder. A binary system of "correct" versus "incorrect" is not the only option. Interval scales can be developed to rate responses on a continuum (e.g., degree of correctness or latency of response).
3. The data collection system must allow the clinician to clearly distinguish among imitative, cued/prompted, self-corrected, and spontaneous responses.
4. Once therapy tasks reach the conversational level of complexity, it is often more efficient to use a data recording system that is based on time rather than on total number of responses. For example, it may be easier to document the number of errors per minute rather than identifying all occurrences of a target behavior to calculate percentage correct.
5. Reinforcement tokens or stimulus items can be used as an alternative to paper-pencil online recording of client responses. One useful approach is to organize the items/tokens in groups of 10 or 20. Number and percentage of correct responses can be calculated easily by: (a) counting the number of unearned reinforcement tokens remaining at the end of an activity or (b) checking the number of stimulus items (e.g., picture cards) which the clin-

ician has placed in a "correct response" versus "incorrect response" pile.

6. Record **every** stimulus-response chain. Even the absence of a response to a particular stimulus should be recorded.

Data collection systems are used to maximize a clinician's effectiveness. It is important to recognize that data yield information regarding a client's status on a particular objective. However, data alone do not identify specific programming changes that may need to be made or how to implement them. These clinical decisions can be made only through a clinician's careful analysis and interpretation of the recorded data.

Probes

Probes are instruments that are administered periodically throughout treatment to measure a client's progress. They are designed to assess generalization of a trained target behavior (Hegde, 1985). Probes consist of a set of novel stimuli that are equivalent to, but different than, those used for treatment. For example, after teaching the production of initial /s/ with a set of picture cards, the clinician may probe a client's generalization by presenting a new set of unfamiliar pictures to elicit this phoneme. (Good rule of thumb: 20 stimulus items for each probe.)

Probes are similar to baselines in that client responses are elicited without target-specific instruction and do not receive any reinforcement. However, lengthy periods of nonreinforcement may be undesirable for some clients, particularly in the early stages of therapy. Therefore, a *mixed probe* may be instituted, whereby both trained and untrained stimulus items are presented in an alternating sequence. In this procedure, the client continues to receive reinforcement for responses to the trained stimuli.

The findings obtained from probe procedures are used by the clinician to determine the next step in the therapy program. If the predetermined criterion from the behavioral objective has not been achieved, training should continue at the current level. If criterion has been met, the clinician may choose to shift to a higher level of response complexity in the same target area or move on to a new communicative behavior. Periodic administration of probes is especially important because it minimizes the risk of continuing therapy that is no longer effective or necessary.

Treatment Effectiveness/Efficacy

The most typical approach to data collection is the following single subject design: pretreatment baseline of a target → treatment → posttreatment baseline of the same behavior (in which the baseline measures are identical to one another and different from the treatment items). The information obtained from this data collection method is useful in documenting the amount of

change or progress for a specific client. However, it does not address treatment efficacy in that this design does not permit the clinician to determine whether the intervention itself was responsible for the observed change.

To more adequately document the efficacy of treatment, a *multiple baseline* design can be implemented. A simple multiple baseline procedure involves the selection of at least three target behaviors of similar complexity that are in need of remediation. It is important to choose a set of targets for which direct transfer of learning is not expected to occur from one behavior to the others. For example, it is inappropriate to include phonemes that differ from each other by only one feature (e.g., voicing). Baseline measures are then obtained to ascertain their pretreatment status. Treatment procedures are then implemented for one of the targets. After criterion has been reached on the trained behavior, the clinician repeats the baseline measures on the untrained targets. If the results show no significant change from the original baseline scores, the clinician can be confident that the treatment, and no other factor, was responsible for the client's improvement on the trained target. One of the remaining targets is then selected for training and the treatment/post-treatment baseline sequence is repeated. This procedure is continued until all therapy targets have been trained.

TROUBLE-SHOOTING TIPS FOR THERAPY SESSIONS

If your client is not making adequate progress or seems bored and inattentive, ask yourself the following questions:

1. Are the reinforcers that I'm using during therapy activities really motivating for this client?
2. Am I delivering the reinforcers fast enough for the client to connect them with the target behavior?
3. Did I shift from a continuous reinforcement schedule to an intermittent schedule too soon?
4. Am I teaching the target behavior in small enough steps?
5. Am I presenting the stimuli when the client is not paying attention or not making eye-contact?
6. Is the client bored because the same therapy materials are being used too often?
7. Is the client confused because I tend to phrase instructions in the form of requests rather than directions?
8. Am I programming a sufficient variety of target behaviors during each session to maintain the client's interest and motivation level?
9. Am I providing enough prompts during difficult therapy tasks to ensure that the client is relatively successful?
10. Am I allowing the client to make too many errors in a row without modifying the task?
11. Am I telling the client what he or she does well or giving feedback only about incorrect responses?
12. Am I giving the client enough time to respond before repeating or rephrasing the stimuli?
13. Did I anticipate the unexpected and prepare 50% more material than I thought I needed?

CONCLUSION

This chapter has presented basic information, protocols, and procedures for intervention for communicative disorders at an **introductory** level. This information is intended only as a starting point in the reader's clinical education and training. For indepth coverage of this area, the following readings are recommended:

Cornett, B. S., & Chabon, S. S. (1988). *The clinical practice of speech-language pathology.* New York: Macmillan.

Hegde, M. N. (1993). *Treatment procedures in communicative disorders.* Austin, TX: Pro-Ed.

Hegde, M. N., & Davis, D. (1992). *Clinical methods and practicum in speech-language pathology.* San Diego, CA: Singular Publishing Group.

APPENDIX 1–A

THERAPY OBSERVATION CHECKLIST

Date: _____
Clinician: _____
Supervisor: _____
Client: _____

KEY:
4 = outstanding 1 = weak
3 = above average 0 = unsatisfactory
2 = average N/A = not applicable

Programming

____ Clear rationale for behavioral objectives/activities

____ Appropriate written formulation of objectives (Do statement, condition, criterion)

____ Data from previous session used to determine behavioral goals

____ Skill in revising goals/procedures as necessary during session (branching)

Behavior Modification

____ Appropriate type of reinforcement

____ Appropriate schedule of reinforcement

____ Client behavior managed consistently in a firm yet nonthreatening manner

Key Teaching Strategies

____ Target behaviors modeled accurately

____ Target-specific feedback provided consistently

____ Brief summary of performance given after each activity

____ Therapy techniques appropriate for client's age/developmental level and disorder

____ Appropriate home assignments given with written instruction and demonstration

Session Design

____ Clear preinstruction given for each target behavior

____ Communication style adapted to needs of the client (vocabulary, language level, nonverbal communication)

____ Appropriate interpersonal skills; establishing rapport, motivating client

____ Poised, confident demeanor

____ Appropriate pace and amount of target productions

____ Creative and appropriate therapy materials

____ Appropriate proxemics

____ Objectives for each client integrated into group sessions

Data Collection

____ Ability to judge responses accurately

____ Consistent, accurate data collection

APPENDIX 1–B

WORKSHEET FOR IDENTIFYING BEHAVIORAL OBJECTIVES

Instructions: The objectives listed below are stated incorrectly. Identify the errors in each objective by placing a checkmark in the appropriate column(s).

Objective	Do	Condition	Criterion
1. Client will understand the concept of "red" when shown 30 cards with 90% accuracy.			
2. Client will produce /f/ several times given the clinician's model.			
3. Client will produce a complete sentence in four out of five trials.			
4. Client will use the regular past tense with no errors.			
5. Client will improve voice quality while reciting nursery rhymes with less than one parameter break per minute.			
6. To elicit /s/ and /z/ in single words by presenting familiar objects.			
7. Client will produce "is + verb + ing" with 80% accuracy.			
8. Client will comprehend two-stage directions 100% of the time.			
9. Client will use the stuttering modification technique of "pull-out" frequently during a 1-minute monologue.			
10. Student will write 10 behavioral objectives which meet the criteria as discussed in this chapter.			

*Answer key can be found on the next page.

ANSWER KEY

WORKSHEET FOR IDENTIFYING BEHAVIORAL OBJECTIVES

Instructions: The objectives listed below are stated incorrectly. Identify the errors in each objective by placing a checkmark in the appropriate column(s).

Objective	Do	Condition	Criterion
1. Client will understand the concept of "red" when shown 30 cards with 90% accuracy.	X		
2. Client will produce /f/ several times given the clinician's model.			X
3. Client will produce a complete sentence in four out of five trials.		X	
4. Client will use the regular past tense with no errors.		X	
5. Client will improve voice quality while reciting nursery rhymes with less than one parameter break per minute.	X		
6. To elicit /s/ and /z/ in single words by presenting familiar objects.	X		X
7. Client will produce "is + verb + ing" with 80% accuracy.		X	
8. Client will comprehend two-stage directions 100% of the time.	X	X	
9. Client will use the stuttering modification technique of "pull-out" frequently during a 1-minute monologue.			X
10. Student will write 10 behavioral objectives which meet the criteria as discussed in this chapter.		X	X

APPENDIX 1–C

WORKSHEET FOR FORMULATING AND WRITING BEHAVIORAL OBJECTIVES

1. Do statement: Maintain phonation of a vowel for an average of 1.8 seconds

   Conditions: Using the inhalation method

   Criterion: 9 correct of 10 trials

Behavioral Objective: _____

_____

_____

2. Do Statement: Manipulate objects

   Conditions: Given oral directions containing the concepts up-down, in-out, on-under

   Criterion: With no errors

Behavioral Objective: _____

_____

_____

3. Do Statement: Imitate nonspeech vocalizations

   Conditions: Given the clinician's model

   Given no more than two verbal prompts

   Criterion: 90% accuracy

Behavioral Objective: _____

_____

_____

4. Do Statement: Tally instances of disfluency

   Conditions: While watching a videotape of himself speaking

   Criterion: 95% agreement with the clinician's tally

Behavioral Objective: _____

_____

_____

5. Do Statement: Produce fricatives /f/, /v/, /s/ in CV syllables

   Conditions: In imitation of the clinician

   In response to pictures

   Criterion: With 90% accuracy over two consecutive sessions

Behavioral Objective: _____

_____

_____

6. Do Statement: Use easy onset of phonation

   Conditions: On the telephone

   While reading a written script

   Criterion: With less than two errors

Behavioral Objective: _____

_____

_____

7. Do Statement: Sort 20 pictures of common objects

   Conditions: According to categories named by clinician

   Criterion: 18 correct of 20 trials

Behavioral Objective: _____

_____

_____

8. Do Statement: Say words with /sw/ in the initial position

   Conditions: While looking in a mirror

   Criterion: 100% accuracy

Behavioral Objective: _____

_____

_____

9. Do Statement: Maintain correct production of all forms of the verb "to be"

   Conditions: In spontaneous conversation with the clinician

   Criterion: No more than one error per 3-minute segment

Behavioral Objective: _____

_____

_____

APPENDIX 1–D

SAMPLE DAILY THERAPY PLAN

CLIENT John Adams CLINICIAN Marie Landers

DATE March 8, 1995 DISORDER Articulation/Language

Behavioral Objectives	Data/Results
1. Given 10 pictures for each position and asked to create a sentence for each word, John will produce /f/ in the initial, medial and final positions (IMF) with 90% accuracy.	/f/ I = 100% /f/ M = 90% /f/ F = 60% He was heard to use initial /f/ correctly in off-task comments. 5/6 errors in final position were θ/f.
2. John will correctly label the position of a block in relation to another object as "on" or "under" with 90% accuracy.	30/40 = 75%. Was only required to say "on" or "under" but on the last six responses, client used a phrase as the answer (i.e., "on the chair").
3. John will follow two-step commands with four linguistic elements in response to clinician's verbal directions for 9 out of 10 trials.	5/10 — had to be reminded to refrain from responding until entire command was presented.
4. John will imitatively produce CVC words maintaining final consonant with 90% accuracy.	28/50 = 56%

Reinforcement = 1:1 token + verbal praise
20 tokens = 1 puzzle piece

OBSERVATIONS AND COMMENTS

Client: John has met the criterion for /f/ I and M. Next session we will work only on F position. His spontaneous use of phrases during the preposition activity indicates that he is ready to move beyond the single-word response stage. The data for the two-step command activity suggest that this task needs to be modified. Maybe I will try a tactile prompt by placing my hands over his while presenting each command. I will instruct him that he can start responding as soon as I remove my hands from his. For the final consonant task, John needs some kind of cue to improve his performance. What do you think about using a visual prompt that highlights the concept of "final position" like a train that has three parts: an engine, one car, and a caboose? I gave Mom written instructions for homework for the initial and medial /f/ and for prepositions.

Clinician: The articulation work took up a lot of time today, especially the final consonant activity. I need to design the next session so that an equivalent amount of time is spent on the language and articulation activities. I reviewed the audiotape from today's session and I think my feedback to John was immediate and specific to the targets. I think that my ability to accurately judge correct versus incorrect articulation responses is improving. I need to start fading the continuous reinforcement schedule for the tasks on which John is achieving an accuracy rate of 70% or higher.

APPENDIX 1–E

DAILY THERAPY PLAN

CLIENT _____ CLINICIAN _____

DATE _____ DISORDER _____

Behavioral Objectives	Data/Results

OBSERVATIONS AND COMMENTS

APPENDIX 1-F

REPORT OF OBSERVATION HOURS

Name:_____ Semester:_____

KEY Age: C = Children A = Adults
Category: Select from list below

Articulation Language Fluency Voice Other

Hearing Eval. Selection/Use of Amplif & ALDS Aural Rehab

	Date	Client's first name & initial	Age	Category	Hours Diag.	Hours Ther.	Supervisor initials
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

TOTAL OBSERVED HOURS

Speech Hours_____
Supervisor's
Signature_____
Date_____

Audiology Hours_____
Supervisor's
Signature _____
Date_____

APPENDIX 1–G

INSTRUCTIONS FOR USING DATA RECORDING FORMS

Session Data Log: This is an all-purpose data sheet designed to record an individual client's performance within a single session. Determine the type of notational system that will be used to record client responses (e.g., + or −, o or ×, etc.) and enter this information in the box labeled "Key." Write the name or description of tasks in the left column (up to a maximum of 18). The numbered boxes indicate the number of trials. Record the accuracy of each response in the appropriate box. If the number of trials on a given task exceeds 20, continue to record on the next line of the grid. Calculate percentage of correct responses and enter this information in the far right column for each task.

Summary Data Log: This form is used to summarize information about an individual client's performance across a maximum of 20 sessions. It is designed to display client progress on specific therapy tasks over time. Enter session numbers or session dates in the boxes indicated at the top of the grid. Write the name or description of tasks in the left column (up to a maximum of 17). Retrieve the percentage of correct responses for each task from previous daily sheets (e.g., Session Data Log) and enter this information under each session date or number.

Summary Data Graph: Like the Summary Data Log, this form is used to summarize information about a client's status across a maximum of 20 sessions. The unique aspect of this form is that it allows the clinician to graph a client's progress on one or more objectives. Select a code for each objective that will be used on the graph to plot client performance. The code can consist of lines of different colors or patterns (e.g., solid, dotted, hatched, etc.). Enter this information along with a brief description of each task in the Key. Retrieve performance data for each task from daily data sheets. Enter the session dates on the designated line, beginning with the pretreatment baseline session. Plot percentage of performance on the graph for each date (and for each task) and connect the data points to create a visual display of client progress.

Response Data Form: This is an all-purpose data sheet designed to track an individual client's responses on a single task during one session. It allows the clinician to document the specific stimulus items that are presented to a client during a given activity. Write the behavioral objective, therapy materials, and reinforcement type and schedule on the designated lines. Determine the type of notational system that will be used to record client responses (e.g., + or −, o or ×, etc.) and enter this information in the Key. Record each stimulus in the lefthand column as it is presented. Note correct versus incorrect responses in column 1. This form can accommodate 20 stimulus items which can be presented for a maximum of 10 trials each. Count the number of correct and incorrect responses and calculate the percentage of accuracy. Enter this information in the appropriate box at the lower left of the form.

Response Rating Scale: This is a general form that can be used to document an individual client's performance within a single session. This form utilizes a scale that allows the clinician to rate the quality of a client's responses along a continuum of accuracy. The continuum is a five-level scale which includes the old error pattern (O), cued responses (C), approximations (A), self corrections (S), and the new target behavior (T). Enter the task in the left column. The numbered boxes indicate the number of trials. Record the rating for each response (i.e., O, C, A, S, T) in the appropriate box. If the number of trials on a given task exceeds 20, continue to record on the next line of the grid. Calculate the percentage of each response type and enter this information in the far right columns for each task.

Articulation Data Sheet: This form is designed to record an individual client's responses during articulation therapy. Determine the type of notational system that will be used to record the client's responses (e.g., + or −, o or ×, etc.) and enter this information in the box labeled "Key." This form can be used in at least two ways. It can function as a data sheet for a single session or it can be used to track a client's progress over time. Enter the session date and the therapy activity in the appropriate boxes. All correct and incorrect responses for each activity are recorded in a single box under the appropriate level of difficulty (e.g., Isolation, Syllable, Words, etc.). A single box may contain as many as 20–30 response

notations. The amount of time spent on each activity also can be documented on this form. Count the number of total and correct responses and calculate the percentage of accuracy. Enter this information in the appropriate box.

Individual/Group Quick Tally Sheet:

This form is designed for data collection in individual or group therapy sessions. For individual sessions, enter the client's name in the first box on the left. Assign a code or number (e.g., A or #1) for each activity and enter this information for the first activity in the same box. As the stimuli are presented, record incorrect responses by making a slash mark through the corresponding number. Correct responses are indicated by the lack of a slash mark. Tally the number of correct responses and calculate the percentage of accuracy. Enter this information on the appropriate lines. Repeat this procedure for each subsequent activity (except for re-writing the client's name). For group sessions, this form can be used in at least two ways depending on the size of the group. For groups of three or fewer, enter the name, activity code, and response data for each individual from left-to-right across the page in the same row. This orientation permits data to be recorded on a maximum of six activities for each group member. For groups with three to six members, enter the data for each client from top-to-bottom down the page in the same column. This orientation accommodates a maximum of three activities per group member.

Group Therapy Data Sheet:

This form is designed for use in therapy groups that range in size from two to four members. Determine the type of notational system that will be used to record the clients' responses (e.g., + or −, o or ×, etc.) and enter this information on the line labeled "Response Key." Enter each group member's name on the indicated line. Assign a code or number (e.g., A or #1) for each activity and enter this information for each group member in the appropriate box. Record the accuracy of each client's responses in the boxes below the numbers. This data form allows for a maximum of 50 trials (per member) to be recorded for each activity. The amount of time each client spends on a given activity also can be documented on this form. Count the number of correct and total responses and calculate the percentage of accuracy for each client. Enter this information in the appropriate boxes.

SESSION DATA LOG

NAME OF CLIENT _____ NAME OF CLINICIAN _____ DATE_____

Key

TRIALS

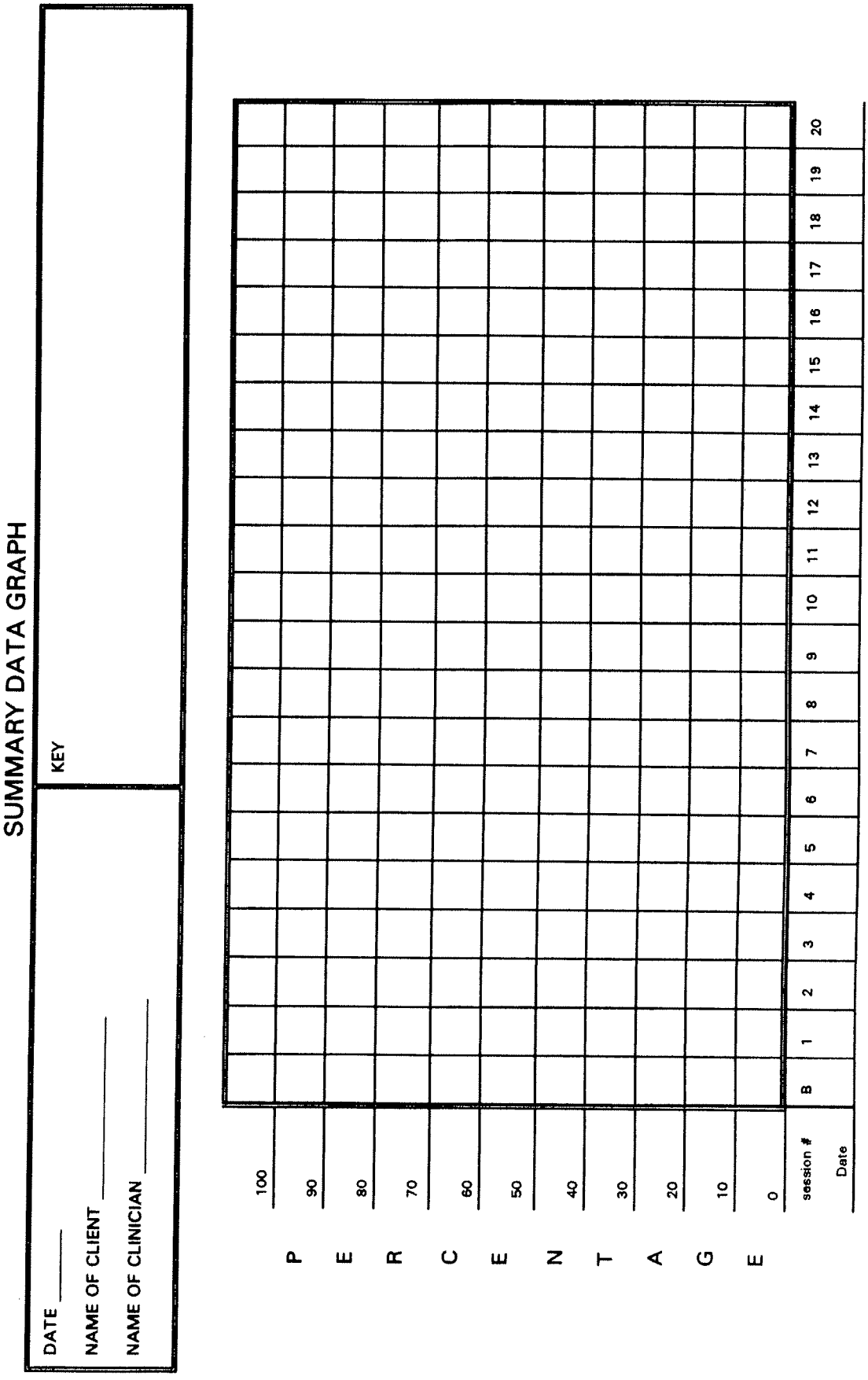
TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% correct

SUMMARY DATA LOG

NAME OF CLIENT _____ NAME OF CLINICIAN _____

DATE OR SESSION #

TASK																				


SUMMARY DATA GRAPH
KEY
DATE _____
NAME OF CLIENT _____
NAME OF CLINICIAN _____
PERCENTAGE
100
90
80
70
60
50
40
30
20
10
0
session #
Date
B
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

RESPONSE DATA FORM

NAME OF CLIENT_____ NAME OF CLINICIAN _____ DATE _____

Behavioral Objective: _____

Therapy Materials: _____

Reinforcement Type & Schedule: _____

TRIALS

STIMULUS PRESENTED	1	2	3	4	5	6	7	8	9	10	COMMENTS
1.											
2.											
3.											
4.											
5.											
6.											
7.											
8.											
9.											
10.											
11.											
12.											
13.											
14.											
15.											
16.											
17.											
18.											
19.											
20.											

Total Number of Responses: Total Correct Responses: Total Incorrect Responses: Percent Correct:	KEY:

RESPONSE RATING SCALE

NAME OF CLIENT ______________ NAME OF CLINICIAN ______________ DATE ______

Key

O = Old behavior
A = Approximation
S = Self correction
T = Target behavior

TRIALS

TASK	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	% O	% A	% S	% T

ARTICULATION DATA SHEET

NAME OF CLIENT _____ NAME OF CLINICIAN _____

Key

Date	Activity	Iso.	Syl.	Words	Sent.	Read.	Conv.	Time	Total Resp.	Total Corr.	% Corr.

Individual/Group Quick Tally Sheet

Clinician ______________________ Date ______________

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
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26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
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16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
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26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

Name____________
Activity________
1 2 3 4 5
6 7 8 9 10
11 12 13 14 15
16 17 18 19 20
21 22 23 24 25
26 27 28 29 30
31 32 33 34 35
36 37 38 39 40
41 42 43 44 45
46 47 48 49 50
Correct_____
% Correct_____

GROUP THERAPY DATA SHEET

Date________________________________ Clinician________________________________

Name **Response Key:**

Activity:						Time				# Correct					Total Resp.					% Correct				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Name

Activity:						Time				# Correct					Total Resp.					% Correct				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Name

Activity:						Time				# Correct					Total Resp.					% Correct				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

Name

Activity:						Time				# Correct					Total Resp.					% Correct				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26
26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50