CHAPTER 1

Language Assessment and Intervention: A Developmental Approach

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OBJECTIVES

- Define language and its five domains
- Introduce the clinical process of language assessment and intervention
- Understand the importance of developmental milestones

INTRODUCTION

This chapter introduces the clinical process of language assessment and intervention within a developmental framework. Language assessment (evaluation) includes understanding a child’s history of development relative to normal developmental milestones as well as the child’s functional communication (e.g., conversation) and performance on formal tests. A thorough evaluation of the child can determine whether a delay or disorder exists, and whether the delay/disorder is specific to language or involves multiple areas of development (e.g., cognition, motor skills). The clinician can also hypothesize about the child’s prognosis in terms of gains to be made with and without intervention (treatment).

Knowledge of milestones across developmental domains is essential for the speech-language pathologist. The developmental milestones that children pass through provide a set of expectations for the clinician about what children should be doing as they age. The clinician uses these milestones to evaluate the child’s performance and functioning and compare it with that of same-age peers. Knowledge of developmental milestones can then guide the clinician in how best to educate parents and to make referrals to other professionals.

Comparing the child’s current level of functioning with what is expected for his or her age or cognitive level can also help the clinician in determining whether intervention is warranted. If intervention is appropriate, then the first phase of intervention is to determine the appropriate goals.
for the client. Goals are the behaviors or skills that the clinician helps the child in learning. They are determined by the developmental milestones that the child should progress to next and by the component skills needed to achieve a more complex milestone. For example, following directions requires the child to attend to the speaker, to understand the vocabulary used in the direction, and to decode the grammar. When the clinician is well grounded in the normal progression of development, he or she can determine the appropriate treatment goals, appropriate activity level to target the goals, and the types of scaffolding to provide the child as part of therapy.

Development is predictable. Milestones emerge in a predictable sequence, and they emerge or are mastered within a timeline that is consistent for most children. For example, most children speak their first word around their first birthday, combine words around their second birthday, and soon thereafter acquire grammatical endings such as the present progressive verb form (e.g., the -ing in eating). Although development varies across children, most of them achieve milestones within a predictable age range. For example, although most children speak their first word at 12 months, clinicians consider a range of 11 to 13 months for achieving this feat to be typical.

Across areas of development there is also a predictable relationship between skills. Developmental skills fall under the broad areas of motor development (gross motor, fine motor) and cognitive development (play, gesture, memory, attention). Observation in one skill area builds the clinician’s expectation about the level of development in other skill areas. For example, some gesture milestones predict language milestones, and motor, play, and language skills develop in parallel. For instance, children walk and say their first word around the same time. Pointing gestures precede first words, and when the child is combining words, he or she is also likely to be combining play schemes.

This chapter introduces the process of evaluation and intervention within a developmental framework. First, it reviews the definition of language and the criteria for becoming a speech-language pathologist. Second, it provides a table of major developmental milestones. Each of the remaining chapters of the text is dedicated to providing more detailed information about each developmental area. Third, it delineates the process of evaluation and intervention. Three case studies are introduced in this chapter and then referenced throughout the rest of the text as the various authors discuss specific areas of development. Authors will reference these case studies in three ways. First, information already present in the case studies may relate directly to a discussion. Second, additional analyses may be suggested for these hypothetical clients. Third, future performance in development can be predicted for each case as authors discuss skills at older age levels.

WHAT IS LANGUAGE?

The American Speech-Language-Hearing Association (ASHA) defines language as a complex and dynamic system of conventional symbols that is used in various modes for thought
What Is Language?

A variety of symbols express language—for example, the sound symbols heard in speech, the written symbols seen in text, the manual symbols seen in signed languages, and the iconic symbols seen on some augmentative communication devices. Therefore, language is separable from the modality of communication that an individual uses to express himself or herself and to understand others. Everyone in a given community must agree on the same set of symbols for communication to be successful. This need for consistency leads to the “conventional” part of the definition. Language as a dynamic system means that language systems evolve and change over time. For example, new vocabulary is added to a language with new technology, as in the case of e-mail, text messaging, and blogging.

Language is a rule-governed behavior, a characteristic that allows it to be generative. Each language has a set of rules that make what is expressed socially appropriate and grammatical within a culture. This set of rules also ensures that communication is successful. For example, the English rule is that subject pronouns are always expressed with the exception of the imperative. In contrast, in Italian, the subject pronoun can be deleted with multiple verb tenses because case and number are also marked by the verb ending. That language is generative means that there are infinite possibilities in what is said and understood. As a consequence, individuals can express and understand sentences that they have never heard before. They rely on the rule system to generate novel grammatical and socially appropriate sentences in a given language.

Language is described by at least five separable domains: pragmatics, semantics, phonology, morphology, and syntax. These separable domains can be grouped into the form (phonology, morphology, syntax), content (semantics), and use (pragmatics) rules of a language. The form of the language comes from the sound system (phonology) and the grammar system (morphology and syntax). It is the structural aspect of the language. Phonology is the sound system of the language. It is the smallest unit of language that overlays meaning onto the motor movements of speech. Clinicians use a special notation—the International Phonetic Alphabet (IPA)—to describe the sounds of a language. IPA differs from the orthographic symbols that you are reading now. For example, even though the word go consists of two letters and the word dough is made up of five letters, each has only two phonemes (i.e., sounds): /g/ and /o/, and /d/ and /o/, respectively. The sound change in /g/ to /d/ from go to dough is what signals a change in word meaning. However, /g/ and /d/ on their own do not have meaning.

Morphology is the smallest unit of language that expresses meaning. Two types of morphemes are distinguished: bound and free. Bound morphemes must be attached to a root word. Root words are free morphemes because they can stand on their own. Consider three examples: dogs, walks, and walked. Each of these words contains two morphemes. The word dog/s contains the free morpheme dog and the bound morpheme plural s. In this instance, the morpheme
plurals have the meaning of “more than one.” Similarly, the third person singular verb conjugation *s* and the past tense *-ed* in *walk*s and *walk/ed*, respectively, indicate when an action occurred. The *s* indicates the action is currently happening and the *-ed* indicates that the action is finished. Even though these morphemes carry meaning, they cannot occur on their own: They are bound to a root word. In contrast, the phoneme */s/ in *soap* expresses no meaning except in how it functions to differentiate the word from other words such as *rope*.

A further distinction made for morphemes is that bound morphemes can be inflectional or derivational. The morphemes just discussed are inflectional morphemes; they indicate the tense of verbs. Tense refers to the timing of an action (present, past, and so on). Derivational morphemes include prefixes (e.g., *re-, un-*) and suffixes (e.g., *-ness, -ly*). Derivational morphemes change the word class of the root morpheme. For example, the morpheme *-ness* changes the word *happy* from an adjective to a noun, *happiness*.

Syntax is the sentence-level structure of language that marks relationships between words and ideas. This domain includes rules for constructing different types of sentences, such as declaratives, interrogatives, negatives, passives, and other complex sentences with conjoined or embedded clauses. See Table 1-1 for examples of each sentence type. The structure of phrases also falls under the purview of the syntactic domain. Syntactic rules also dictate our choice of words and the order in which those words occur. For example, in English, adjectives are expressed in the noun phrase (e.g., *the friendly dog*) but negation occurs in the verb phrase (e.g., *I am not feeding the friendly dog; I did not feed the dog*). The negative *not* cannot occur in the noun phrase and must be placed between the auxiliary (*am*) and the main verb (*feed*). In English, it is ungrammatical to say *Not, I am feeding the friendly dog*. English also requires a “dummy” *do* verb to be inserted if an auxiliary is not already present. In the second example, *I did not feed the dog*, the affirmative is *I fed the dog*. When this sentence is negated, the *do* verb (*did*) must be used. These sorts of rules fall under the syntactic domain of language. Much of what we understand about the theory and rule system of syntax comes from Noam Chomsky’s theory of Universal Grammar (for a review, see Shapiro, 1997).

Semantics is the meaning system of language. It can include the meaning expressed by single vocabulary items (e.g., *dog* = noun, animal, four legs, barks, canine, domesticated) or the proposition expressed by vocabulary items in combination (e.g., *mommy shoe* = the shoe belongs to mommy; *shoe mommy* = a request for the child’s shoe). Semantics actually consists of two distinct types of information: lexical and conceptual. Lexical information is the word form that includes the phonological composition of the word, where the word form is referred to as a lexeme. The conceptual information is the meaning associated with the lexeme. For example, the word *dog* comprises three phonemes in sequence */d/, */ɔ/, */g/*, which together are expressed as the lexeme */dɔɡ/*. The meaning of dog may include four legs, having a tail, barking, and being a domesticated animal. Children need to develop both lexical and conceptual
information of words as well as the link between the two so that they can express and understand language successfully.

Pragmatics refers to how we use the form and content of language. Pragmatic behaviors may include the intention that an utterance or gesture conveys, the way in which we use and understand body language, the social appropriateness of an utterance, and the process of ensuring the appropriate amount of information is provided to a listener. For example, a toddler may point to a cookie and say *gimmie*, or he may say *want cookie*. In both instances, the intent of the communication is the same—the child wants the mother to give him the cookie—even though the form of that communication differs. In the first instance, the pointing gesture indicates the object; in the second utterance, the word *cookie* indicates the object. The pragmatic aspect of both utterances is the intention, to request. As another example of pragmatics, rules govern how one varies the language that is used with various listeners. That is, we do not use the same kind of language when speaking to a professor, a supervisor, or a stranger as we do with a parent, a sibling, or a friend. If we were to speak to all of these individuals similarly, one or more could be offended or made to feel uncomfortable.

Another aspect of pragmatics includes how much information is provided to the listener. The information given to a listener has to be sufficient without giving too little or too much information. For example, a speaker cannot use a pronoun (*he*) without having already identified to whom *he* is referring. As another example, speakers must introduce a topic of conversation. If a friend approached you and stated, “I told the mechanic to rotate my tires,” you should think this odd. According to pragmatic rules, we generally make greetings first and then introduce a topic. Further, we introduce a topic and then expand on details. In fact, we have

<table>
<thead>
<tr>
<th>Sentence Types</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Declarative</td>
<td>My sister walks the dog.</td>
</tr>
<tr>
<td>Interrogative</td>
<td>Who is walking the dog?</td>
</tr>
<tr>
<td></td>
<td>What is my sister doing?</td>
</tr>
<tr>
<td>Negative</td>
<td>My brother does not walk the dog.</td>
</tr>
<tr>
<td>Passive</td>
<td>The dog was fed by my brother.</td>
</tr>
<tr>
<td>Conjoined</td>
<td>My brother and sister take turns walking the dog.</td>
</tr>
<tr>
<td></td>
<td>My brother feeds the dog and my sister walks the dog.</td>
</tr>
<tr>
<td>Clausal Embedding</td>
<td>My sister walks the dog that lives next door.</td>
</tr>
<tr>
<td></td>
<td>It is our dog that my brother feeds, not our bird.</td>
</tr>
</tbody>
</table>
some language conventions for acknowledging when we violate a rule such as this (e.g., *Oops, I changed lanes*, or *Sidebar, or I’m changing topics*). Violations in pragmatics often can be the source of humor between friends. Conversely, they can be problematic when the speaker has no awareness of these rule violations and when they are pervasive in disrupting communication. This problem often arises with children who have language learning delays.

Nonverbal behaviors such as eye contact and body gestures also fall under the domain of pragmatics. Nonverbal behaviors communicate information, as the pointing example given earlier illustrates. Consider the message received if a friend says to you, *“It is fine that you forgot to call me.”* If the friend says this but also averts her eye gaze and has an angry tone in her voice, then the nonverbal aspects of this communication let you know the friend is not happy with you. Even though the form of the language expressed understanding, the nonverbal behaviors of eye contact and vocal tone did not. In contrast, if that friend says the same sentence but has a casual tone to her voice, then you can assume that no offense occurred. As with the other domains of language, pragmatic rules for nonverbal behavior must be learned, and these rules differ cross-culturally. Thus it is particularly important for clinicians to fully understand the pragmatic rules (as well as other rule systems) of the language and culture of their clients.

**RECEPTIVE VERSUS EXPRESSIVE LANGUAGE**

For communication to be successful, language must be produced as well as understood. The ability to understand or comprehend the domains of language is referred to as **receptive language**. The ability to produce or speak (sign, write, etc.) language is referred to as **expressive language**. Following a direction such as “Give me your cup” requires the child to understand individual words (*give, cup, me, your*) as well as the relationship between those words. Therefore, knowing which cup the child needs to perform the action is dependent on the child understanding the possessive pronoun in combination with the noun. It is the child’s cup—not the mother’s cup—that needs to be given. If the child throws the cup on the floor instead of handing it over to the mother, he may understand that “cup” is somehow involved in what was said to him, but might not understand the word “give” or the relationship between what he was supposed to do (the action of giving) and the goal of that action (to the mother).

In another example, if you show a child a picture of one shoe and a picture of two shoes and ask the child to show you *the shoes* (versus *the shoe*), she should be able to point to the picture of two shoes if she understands the plural *s* morpheme. If the child does not understand the plural morpheme, then she will randomly point to either picture.

The child’s ability to comprehend a certain level of language often precedes the child’s ability to produce the same language. This phenomenon is observed in both typically developing and
language-delayed children. A child may follow a direction correctly but may not produce the same sentence until many months later. Some children with language impairments exhibit more expressive language than understanding of language; this is not typical in most children’s development.

**STAGES OF COMMUNICATION**

Three stages of communication have been described: perlocutionary, illocutionary, and locutionary.

The *perlocutionary stage* refers to the unintentional stage of communication. During this stage, the infant produces behaviors such as burping or vocalizations that have no intended message. This stage typically occurs before approximately 8 to 10 months of age, although children who demonstrate delays in development may remain in this stage longer. These vegetative or unintentional behaviors are often responded to by adults as if they were intentional communicative acts. The infant may burp and the mother responds, “Oh, you’re full!”, or the infant may vocalize a sustained /a/ and the father responds, “Oh, you have something to say?” These adult responses help the child to learn language and to gain a sense of what intentional communication gets them—namely, attention and the meeting of needs. It establishes turn-taking interactions, which is also a vehicle for caregivers to provide the child with models of language.

At approximately 10 months of age, the typically developing infant begins to use gestures and nonlinguistic vocalizations (e.g., jargoning) intentionally to communicate. For example, the child may request a cup by pointing to it. This intentional communication without the use of words is referred to as the *illocutionary stage* of communication.

Soon after, at approximately 12 months of age, the infant produces his first word and enters the *locutionary stage* of communication. This phase is characterized by intentional communication expressed with words. It is the linguistic (and metalinguistic) stage of communication.

Some behaviors observed during the perlocutionary and illocutionary phases of communication are referred to as prelinguistic skills. They include gestures, eye contact, joint attention, and turn-taking behaviors. The prelinguistic skills of eye contact, joint attention, and taking turns during an interaction are the building blocks of successful communication and language learning. If a child is not looking at you, attending to the activity, and able to take turns, then she will miss your language models and will not imitate what you have said or done. Imitation is another skill the infant needs to have to learn language. Some children who demonstrate delays in language learning do not engage in these prelinguistic behaviors. If this is the case, then these behaviors are appropriate goals of intervention.

The locutionary phase of communication development can be divided into two types of skills: linguistic and metalinguistic. The term *linguistic* (or language) has already been defined. Language develops throughout the lifespan. Development of some domains is largely com-
pleted by eight years of age (e.g., phonology), whereas other domains (e.g., semantics) continue to develop into adulthood.

The term *metalinguistic* refers to the child’s ability to think and talk about language. This skill is necessary if one is to understand the language used in humor, riddles, and metaphors, for example. These kinds of higher-level language uses are often part of academic instruction, social communication, and cultural phenomena (e.g., advertising). Other examples of metalinguistic skill include a child’s ability to identify the first or last sound in a word, to express a rhyming word, to explain why a joke is funny, and to define a word. These tasks require the child to consciously analyze and manipulate language. Proficient reading and writing skills are also considered metalinguistic skills.

**WHO IS THE SPEECH-LANGUAGE PATHOLOGIST?**

Speech-language pathologists are professionals who are trained in the assessment and treatment of disorders in the areas of speech (articulation, voice, fluency), language, cognition, and eating/swallowing. Speech encompasses the respiratory, laryngeal, velopharyngeal, and oral-motor movements that express language. Speech-language pathologists are also actively involved in elective services, such as training non-native speakers of English to reduce their primary language accent or facilitating gender-preferred speech-language patterns for transgender individuals.

Speech-language pathologists are typically licensed by their state and certified by ASHA. ASHA is the national organization that regulates the professional practice of speech-language pathologists and audiologists. Speech-language pathologists and audiologists are required to earn a graduate degree in speech-language pathology or audiology, respectively; complete a nine-month supervised clinical fellowship after their graduate degree; and pass a national examination (Praxis examination).

Referral to a speech-language pathologist occurs when a parent, teacher, or pediatrician is concerned that a child is delayed in meeting speech, language, or feeding milestones. For example, children begin combining words around their second birthday. Parents may notice that their child is not yet expressing phrases such as *mommy go* at this time even though their child’s peers are doing so. Parents typically consult with their child’s pediatrician and are then referred to a speech-language pathologist for an evaluation. A referral to an audiologist should also be made at this time to rule out a hearing loss. Sometimes the speech-language pathologist will first screen the child’s hearing. If the child does not pass the hearing screening, the speech-language pathologist can then refer her to an audiologist for a complete evaluation.

When a speech-language pathologist first speaks with a concerned parent, s/he asks some general questions regarding the child’s development to determine whether an evaluation is ap-
Who Is the Speech-Language Pathologist?

propiate. This information includes the parent’s main concern, the child’s primary medical and developmental diagnoses, and an acquisition timeline of some early developmental milestones. For example, a speech-language pathologist may ask a parent the following questions:

- What concerns you about your child’s communication?
- Does he have any known medical or developmental conditions?
- Has your child’s hearing been tested?
- When did your child say his first word?

Once it is determined that a language evaluation is appropriate, the speech-language pathologist organizes an assessment protocol. An assessment protocol is a plan of procedures to follow during the evaluation. The goals of a language evaluation are to answer the following questions:

- Does the child demonstrate delays or a disorder in reaching language milestones?
- What are the child’s strengths and weaknesses in language relative to other areas of development (e.g., motor) across behavioral domains?
- Can a potential etiology or contributing factors of the delay be determined?
- What is the child’s prognosis for gains to be made in development with and without intervention?
- Is intervention warranted for the child? Should this child be monitored?
- What are the appropriate goals of intervention?
- Are referrals to other professionals appropriate (e.g., occupational therapy, physical therapy, developmental pediatrician)?

The evaluation protocol includes gathering details about the child’s history of development (background history), testing language skills (formal testing), and analyzing language

Audiologists are specialists in the area of hearing, which is necessary for oral/aural communication to develop. Audiologists are responsible for the assessment of hearing. Intervention (treatment) may be necessary to help an individual learn or maintain language skills in the face of hearing loss or deafness; such intervention is referred to as aural habilitation or aural rehabilitation. Either an audiologist or a speech-language pathologist may provide intervention for individuals with hearing loss.

Other treatments for individuals with hearing loss may include hearing aids, FM devices, cochlear implants, and/or environmental manipulations. Cochlear implants are a relatively new surgical treatment for profound hearing loss. They allow sound impulses to reach the brain for processing. Cochlear implants consist of a series of electrodes that replace the part of the cochlea that is not functioning. A surgeon implants the device, but the audiologist is responsible for the programming of the implant once it is placed. Aural habilitation is also necessary for individuals who receive a cochlear implant.
skills within a functional communication context (spontaneous language sampling). Discourse (conversational) and narrative (story telling) contexts are appropriate for spontaneous language sampling depending on the child’s age. For children who function cognitively before the age of five years, discourse samples should be elicited within a play-based context. At each stage of the clinical process, from assessment through intervention, knowledge of when children achieve language and other cognitive milestones is critical to the efficacious and ethical provision of speech-language pathology services.

Once an evaluation session is completed, the clinician documents the child’s history and performance on formal tests and the clinician’s analysis in a written report. The clinician synthesizes this information to determine a diagnostic and prognostic statement of how the child is expected to progress with and without intervention. Finally, the report contains recommendations on whether intervention is indicated and what goals of intervention should be.

**BACKGROUND HISTORY**

The child’s background history is an important feature of the evaluation process because certain events and conditions are known to place a child at risk for language delays. Information is collected about several areas of the child’s background. These include prenatal events (i.e., during the mother’s pregnancy), birth events, medical/health issues, developmental milestones (gross motor, fine motor, language, play, gesture), caretaking and education information (daycare, schooling, home care), previous evaluations and interventions, and the family’s history of speech-language delays. Table 1-2 provides some examples of background history information. Having knowledge of the child’s background helps the speech-language pathologist make hypotheses about whether the child is at risk for language delay, why a child may be delayed in language development, and what the child’s prognosis may be for making gains in development. For example, children who are born prematurely or who are exposed to cocaine or alcohol during the mother’s pregnancy are known to be at risk for language delays. Delays in meeting language milestones are also characteristic of some genetic disorders (e.g., Down syndrome). It is also important to be aware of background information in planning the evaluation.

When a child is born prematurely, clinicians must correct the child’s age for the remaining gestational months. Development from prenatal to postnatal periods is continuous. Therefore, the child’s chronological age of 12 months is calculated from birth regardless of length of gestation, but her adjusted or developmental age (10 months) takes gestational age at birth into account. The child who is 12 months of age, chronologically, was born 12 months ago. If the child was born 12 months ago but this date was 2 months premature (i.e., the child was born at 7 months gestation instead of 9 months gestation), then the child’s adjusted age (or developmental age) is 10 months. The expectation for this child is that she should have the skills of...
a 10-month-old infant, not the skills of a 12-month-old. The issue of correcting a child’s age is important in determining whether a child is delayed, because the child acquires new skills and meets milestones quite rapidly in the first two years of life. Recall that the child typically says his first word at 12 months but will probably not have words at 10 months. A chronological 12-month-old who has an adjusted age of 10 months would not be considered delayed if he has not yet spoken his first word. It is common clinical practice to stop adjusting a child’s age for prematurity after two years of age (chronological age).

**SPONTANEOUS LANGUAGE SAMPLING**

Analysis of a spontaneous language sample is critical to assessing the functional use of language skills for communication. Functional communication refers to the child’s ability to use each language domain to communicate successfully in her everyday experiences. Analysis of the spontaneous language sample is considered a formal analysis because performance can be compared to same-age peers.

<table>
<thead>
<tr>
<th>Background History</th>
<th>Typical Events</th>
<th>Remarkable Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal</td>
<td>Child was born at term after 38 to 40 weeks’ gestation, weighing 6 pounds, 3 ounces</td>
<td>Child was born prematurely, prior to 38 weeks’ gestation</td>
</tr>
<tr>
<td>Birth</td>
<td>Child was born without difficulty</td>
<td>Child incurred loss of oxygen during the birthing process due to breech birth presentation</td>
</tr>
<tr>
<td>Medical/Health</td>
<td>Child has had no ear infections</td>
<td>Child has incurred multiple episodes of otitis media (ear infections)</td>
</tr>
<tr>
<td>Developmental</td>
<td>Child sat at 6 months, and walked and said first words by 12 months</td>
<td>Child walked at 15 months and is not yet saying first words at 18 months</td>
</tr>
<tr>
<td>Education</td>
<td>Child has not received special services for development</td>
<td>Child received early intervention services</td>
</tr>
<tr>
<td>Family History</td>
<td>No history of speech-language disorders is reported for family members</td>
<td>Members of child’s family have been diagnosed with speech or language disorders (e.g., dyslexia)</td>
</tr>
</tbody>
</table>
The clinician can collect a spontaneous language sample by structuring a developmentally appropriate interaction. For younger children, the clinician can have developmentally appropriate toys available on a mat and include a developmentally appropriate storybook with pictures. For older children, the clinician can prepare appropriate topics of conversation about academic, social, hobby, vacation, and sports topics. A sample of the child’s language is elicited under these conditions and recorded during the assessment. Later, the clinician can transcribe and analyze the child’s language from the video/audio tape.

Most formal analyses require a sample of 100 utterances that are continuous and considered representative of the child’s communication. Oftentimes the child’s middle 100 utterances are analyzed because this section of the sample is thought to be most representative of the child’s skills. That is, this part of the sample occurs after the child has gotten comfortable with the new environment but before he feels fatigued; at this point, the child tends to show his best colors. The same sample can be used to analyze each language domain.

The book Guide to Analysis of Language Transcripts (Retherford, 2000) provides a description of several analyses of semantics, morphology, syntax, and pragmatics. In addition, the manual provides normative data and interpretation of results. Two examples of common spontaneous language analyses used in clinical practice are the mean length of utterance (MLU) and the number of different words (NDW). The MLU is a syntactic measure of utterance length, in morphemes. The NDW is a semantic measure of how many different vocabulary words the child uses. Formal analyses of discourse and narrative samples are also available (e.g., Applebee’s System of Scoring Narrative Stages; Applebee, 1978). The clinician’s knowledge of developmental milestones is used in analyzing the language and cognitive behaviors observed in the spontaneous interaction. The authors of the various chapters in this text will discuss spontaneous language analyses further.

**FORMAL TESTING**

Formal tests have been developed to survey a child’s skills in a variety of areas. Formal tests allow the clinician to calculate a raw score by adding the points for accuracy. When administering a formal test, the clinician determines the level of skills that the child has, known as the basal level of performance, and the upper limit of what the child can accomplish, known as the ceiling level of performance. This range from basal to ceiling determines the raw score. The raw score, which is the number of correct items on the test, is statistically converted to a normative scoring system. This normative score is already calculated for the clinician in tables provided in the test’s manual.

Two examples of normative scoring systems are the standard score and the percentile. They are categorized as “normative-referenced” tests because a specific child’s performance is compared to a sample of children used to provide a summary of typical (or “normal”) development.
The standard score has a mean score and a standard deviation from the mean. For most tests, the mean score is 100 and the standard deviation is 15 points. Thus a score that falls within the range of either 85–100 or 100–115 is considered to be within one standard deviation of the mean; a score that falls within the range of either 70–85 or 115–130 is considered to be within two standard deviations of the mean; and so forth. By current clinical standards, a score that falls within the range of 85–115 is considered typically developing performance. Some subtests of a formal test will use a mean of 10 and a standard deviation of 3 (i.e., typical performance range is a standard score in the range of 7–13). The clinical convention currently used to identify children with a language delay is standard scores that fall below one standard deviation of the mean (i.e., a standard score below 85, or below 7 on an individual subtest).

A percentile score is based on 100% of children sampled and is best understood as how a child performs relative to how many children perform above her and how many children perform below her. For example, if a child’s raw score places her at the 90th percentile for her age, then 10% of the children at the same chronological age performed better and 89% of same-age children performed more poorly. Using percentile scores, children who fall below the 10th percentile are generally identified as having a delay in the area of development being tested. The standard score of 85 and the 10th–15th percentile roughly coincide. Therefore, whether the clinician uses a standard score or a percentile score should not affect the child’s classification as exhibiting a delay in language development.

One benefit to using a standard score or a percentile score is that the child’s performance can be compared across formal measures of language and cognitive functioning because many formal tests use these types of normative scoring systems. The child’s performance can be characterized as within normal limits (low average, average, high average) or outside of normal limits (above average, below average, or delayed). There is a broad range of skill levels that characterizes a child who falls within normal limits. For example, approximately 68% of the population of same-age peers falls within one standard deviation of the mean and approximately 95% of the population falls within two standard deviations of the mean.

Another type of formal test is the criterion-referenced test. The criterion-referenced test determines how many skills a child has at a certain age level. The skills surveyed are determined by the normal sequence of developmental milestones. When making a decision regarding the type of formal tests to administer and the normative scores to report, the clinician must be familiar with the governing body’s criteria for eligibility of services. For example, in the early intervention system, a child’s eligibility for speech-language services is determined by individual states. For preschool, primary school, and secondary school settings, individual school districts determine those criteria.
Formal tests of language can sample a variety of language domains, or they can test a particular language domain or skill in-depth. Formal tests that sample a variety of language domains provide the clinician with a general language score. For example, the *Preschool Language Scale, Fourth Edition*, (PLS-IV; Zimmerman, Steiner, & Pond, 2002) tests the child’s comprehension and production of a variety of language domains. Two subtests are part of the PLS-IV: Auditory Comprehension and Expressive Communication. The PLS-IV is a normative-referenced test administered to children ages birth to 83 months. All domains of language are sampled on this test. For example, on the Auditory Comprehension subtest, an item at the 24- to 29-month-old age level samples a child’s understanding of action words. The child is presented pictures and is asked: *Look at all of the children. Show me the child who is _____*. The clinician then fills in the blank with six actions (e.g., sleeping, eating) and the child must point to the correct pictured action. Children are credited with accuracy if they are correct for four of the six actions. By contrast, on the Expressive Communication subtest, an item at the 30- to 35-month-old age level samples the child’s expression of plural *s*. The child is shown a set of pictures (babies, horses, blocks) and the clinician asks about each individually: *What are these?* The child needs to respond to only one of the three pictures accurately to be credited with expressing plural *s*.

The *Rossetti Infant–Toddler Language Scale* (RITLS; Rossetti, 1990) is a criterion-referenced test used to survey the development of children from birth to 36 months of age. The RITLS surveys skills across several skill areas, including interaction/attachment skills, pragmatic skills, gesture skills, play skills, receptive language skills, and expressive language skills. Children are scored as having a percentage of skills achieved under each skill area at each age level. For example, if a child demonstrates four of the five possible skills sampled, he is credited with 80% of the skills at that age level.

There are also formal tests that assess a single domain of language. These tests provide the clinician with a richer picture of the skills in a particular domain. For example, the *Peabody Picture Vocabulary Test, Fourth Edition*, (PPVT-IV; Dunn & Dunn, 2007) is a test of receptive vocabulary. The child is presented with a four-picture array and must identify the correct picture when the clinician says a word label. This test assesses the size of the vocabulary that the child comprehends.

The *Expressive Vocabulary Test* (EVT; Williams, 1997) is a test of expressive vocabulary. The child is presented with a series of single pictures and asked to name each one. This test assesses the size of the vocabulary that the child expresses.

The *Goldman–Fristoe Test of Articulation, Second Edition*, (GFTA-2; Goldman & Fristoe, 2000) is a test of expressive phonology. The child is presented with a series of single pictures and is asked to name each one. These pictures are different from those used in the EVT because the pictures that make up the GFTA are meant to elicit each consonant or vowel sound of English in different word positions (i.e., initial, medial, final). For example,
the phoneme /g/ is tested through naming girl, wagon, and frog. Sound production is also tested in consonant clusters and diphthongs. Consonant clusters occur when two consonants are spoken together with no intervening vowel (e.g., /st/ in stop), and diphthongs occur when two vowels are spoken together with no intervening vowel (e.g., /aɪ/ in eye).

It should be emphasized here that formal tests, alone, should never form the sole basis for a speech-language pathologist’s determination of a child’s performance and subsequent intervention. If they must be used to determine a child’s eligibility for services, the formal test data generated must be compared to data obtained through other assessment measures including, but not limited to, spontaneous language sampling.

A DEVELOPMENTAL APPROACH TO THE CLINICAL PRACTICE OF SPEECH-LANGUAGE PATHOLOGY

Knowledge of developmental milestones is critical to the practice of speech-language pathology. Clinicians survey several areas of development during an evaluation to understand the child’s overall development. Understanding the child’s language development within the broader context of the child’s overall development enables the clinician to make a more reliable diagnosis, to make hypotheses about why a child may be delayed in language development, to predict the child’s prognosis for making gains, and to plan an appropriate course of intervention.

The developmental areas that clinicians may observe include gross and fine motor skills, gesture, play, and other areas of cognition, in addition to language abilities. The clinician may not use a published test to formally assess each of these areas. For example, the child’s mother may report a delayed milestone, or the clinician may observe the child during the evaluation to be falling behind in a motor milestone (e.g., an eight-month-old child who is not yet sitting up). A referral to a physical therapist for a gross motor evaluation would be appropriate. Therefore, an informal observation of the child’s skills outside of speech and language domains can lead the clinician to make the appropriate referrals to other professionals.

Assessment

In the context of assessment, if the clinician can gain a sense of the child’s cognitive and motor development prior to the language assessment, then he or she can plan appropriate tests and activities for the evaluation. Similarly, if the clinician has a solid footing in developmental milestones, then he or she can make informal observations at the start of the evaluation session and alter the protocol if necessary. Careful planning of the language evaluation (as well as the ability to adapt quickly to the unexpected!) ensures that the diagnosis, prognosis, and plan for intervention are valid and reliable.
For example, if the clinician knows ahead of time that a five-year-old client has the
cognitive functioning of a much younger stage of development, then he or she knows that some
formal tests used with five-year-olds cannot be administered to this child. Instead, the clinician
may choose a formal test that surveys a broader age range so that skills at all possible age levels
are available for testing. If the six-year-old child is functioning more in line with a 30-month-old
child’s level of cognition, then the spontaneous language sample would be elicited using
toys that are more appropriate for the latter age level. By contrast, it would be inappropriate
to elicit a language sample using a story retell context because a child functioning at this age
may not understand the task. An inappropriate context of analysis would not elicit a valid level
of language skills, because the most representative sample of what the child could accomplish
would be missed.

It follows, then, that the evaluation is not simply a listing of the things that the child
cannot accomplish, but rather should include a profile of the child’s strengths and achieved
milestones. By including the child’s strengths and weaknesses, the clinician presents the child
in a broader developmental context and capitalizes on what the child can do to facilitate further
development. It is also important for parents to be counseled about their child’s strengths.

The clinician who is facile with his or her knowledge of developmental milestones can
accommodate a child during the evaluation and make observations about techniques that may
scaffold the child to the next skill level. A scaffold is formally defined as something to raise or
support. In clinical practice, a scaffold refers to the support given a child that facilitates the
next skill level. Scaffolds may include a model of a skill for the child to imitate (e.g., words,
phrases, play schemes, gestures), or providing cues (multimodal hints) such as saying “Listen”
while touching the child’s shoulder to gain his attention prior to giving a direction. Any special
accommodations that the clinician makes during the evaluation must be included in the evalu-
ation report.

The clinician can also set aside time after testing for trial treatment activities. During this
period, the clinician assesses the child’s response to scaffolding of a few behaviors. Again,
because the clinician will only know the child’s areas of delay through the evaluation, he or she
must be comfortable with developmental milestones so as to know what to target during trial
treatment activities. The child’s resulting performance is reported in a section of the evaluation
report entitled “Trial Treatment.”

The scaffolds to which the child responds (e.g., preparatory sets, cues, prompts, models)
are considered by the clinician in his or her final analysis of the child’s language development.
The clinician’s knowledge of the child’s developmental level and knowledge of typical develop-
mental milestones dovetail as the clinician begins to plan the child’s intervention and to hy-
pothesize about the child’s prognosis for gains to be made with intervention. For example, if
the child produces two-word combinations but is not marking early grammatical morphemes,
the clinician will model simple sentences with present progressive verbs (e.g., dancing) because the grammatical morpheme -ing is expected to emerge next in development. If a 30-month-old child does not produce two-word combinations spontaneously but can imitate combinations when the clinician models them, the child may be at the cusp of that level of language development. Such a child would have a better prognosis of making this gain than the child who is not yet pointing or the child who is not yet able to imitate one- or two-word combinations. The latter child would first need to achieve the precursor gesture and imitation milestones.

The clinician who is knowledgeable about developmental milestones will be able to determine whether a child demonstrates development that is considered typical for her chronological (or adjusted) age, whether the child is delayed in skills, or whether the child demonstrates development that is atypical. Atypical behaviors are not seen as part of the typical course of development. For example, if a 25-month-old child speaks in only a few one-word utterances, this level of achievement is typical of a 12- to 18-month-old child and can be considered delayed expressive language development. However, if this same child is not exhibiting gesture or communicative eye contact, and/or joint attention, or if the child says more than she understands, then the clinician may consider this level to be atypical because eye contact and joint attention are present at the earliest stages of infancy. Also, we know that comprehension precedes production of language in typical development.

Knowledge of developmental milestones across skills areas helps the clinician determine whether a delay is specific to one area of development or whether it involves multiple areas of development. After the evaluation is completed, the speech-language pathologist must integrate, analyze, and interpret the child’s history and performance on formal testing, spontaneous communication analyses, and trial treatment. Based on the clinician’s interpretation, he or she makes a diagnosis, develops a statement regarding the child’s prognosis for gains to be made with (or without) intervention, and recommends the appropriate course of action for intervention.

Even though a child may come to the evaluation as a result of concerns related to language development, the clinician may discover that the child has other areas of concern not previously identified. For example, the child may present with a voice disorder, issues with hearing, or motor development delays. Appropriate referrals to other professionals can be made for evaluation of motor, medical, or other cognitive/emotional concerns. These professionals may include a developmental pediatrician, neurologist, psychologist, audiologist, physical therapist, or occupational therapist.

If multiple areas of development are delayed, then the clinician can make hypotheses about which types of goals need to be set for intervention, taking into account the fact that skills in some areas of development are precursors to skills in other areas of development. For example, a child who is not yet sitting up, crawling, or standing may have difficulty exploring
objects and the environment. These sensory-motor experiences are the building blocks for early semantic learning and set the stage for many parent–child interactions in which language is modeled and practiced.

Also, prognostic statements can be made based on the known relationships that exist between areas of development. For example, the child who demonstrates a delay in just expressive language is thought to have a better prognosis than the child who has a delay in the expressive language, receptive language, gesture, and play domains. Likewise, the child who demonstrates delays in more general cognitive functions (e.g., mental retardation) would not be expected to achieve the same level of gains even with intervention as the child who has an intelligence quotient that is within average range.

The assessment process not only leads to a diagnosis, prognosis, and recommendation for intervention, but it also allows the clinician to provide parent education regarding the typical course of development and where their child falls within that framework. The clinician who is facile with developmental milestones is better able to counsel parents about their child and the appropriate expectations caregivers should have for the child.

**Setting Goals and the Intervention Process**

After the evaluation is complete, the clinician writes a summary of his or her findings in an evaluation report. In some cases, the child may simply need to be monitored over time. If intervention is warranted, however, goals to be targeted in intervention are specified. The overarching goal of intervention is to facilitate development to age-expected or cognitively appropriate levels. Goals are the target behaviors the clinician will facilitate in the intervention process. The target behaviors are those behaviors that the child must evolve next in development and/or the component skills necessary to reach a particular milestone. In our example of the 30-month-old child who is not yet marking morphemes, an appropriate goal for intervention is that the child will begin marking present progressive verbs ending -ing in two-word combinations (e.g., *mommy eating*). The present progressive is one of the first morphemes to emerge in toddlerhood, so this makes it the appropriate target for therapy. A goal such as marking copula to be in short sentences would not be appropriate at this time, as copulas are not mastered until later in the preschool years.

Three types of goals are developed by the clinician: long term, short term, and session objectives.

- Long-term goals relate to broadest areas of development or the end product of therapy. For example, a long-term goal might be “The child will demonstrate developmentally appropriate expressive language skills to support functional communication within academic and social contexts.” Success in moving toward the long-term goal does not
generally include a percentage of accuracy measure, but rather tends to be measured within the functional context of daily living.

- Short-term goals are the smaller steps taken to achieve the long-term goal. Short-term goals are meant to be accomplished within weeks to months of setting them. For example, a short-term goal may be “The child will produce grammatical morpheme -ing in two- to three-word combinations within play-based activity at least 80% of the time.” The target behavior in this case is -ing. Limiting the linguistic complexity to a phrase of two to three words is another type of scaffolding the clinician must consider.

- Goals set for a particular treatment session are known as session objectives. A session objective is the smallest step taken to achieve the short-term goal (and ultimately the long-term goal). A session objective may be “The child will produce grammatical morpheme -ing in two-word combinations when provided an immediate verbal model and tactile cue by the clinician in 80% of trials.” Here, we see that a richer scaffolding (a model and a cue) is provided initially because it will provide the child with the best opportunity to elicit and practice the behavior. As the child gains some mastery over producing the behavior, the clinician can reduce the scaffolding, thereby increasing the child’s independence in communication. We would expect this level of independence at a short-term goal interval.

Keep in mind that the session objective and the short-term goal are benchmarks that lead to the accomplishment of the long-term goal. The prognosis for gains to be made toward meeting session objectives, short-term goals, and long-term goals is dependent upon several factors, including the severity of the language impairment, any concomitant disorders, and the family’s and child’s motivation to participate in intervention.

Once a set of long-term goals, short-term goals, and session objectives have been determined, the child is ready to embark on the intervention process. During this process, the clinician meets with the child for guided learning and practice. Within the therapy sessions, the clinician continues to use his or her knowledge of development to structure the expectations of the child and the therapeutic environment. As with the assessment process, the appropriate choice of toys, activities, and other materials is critical to the child’s success in therapy. The clinician must choose materials that are within the child’s developmental functioning so as not to overwhelm the child. The focus of the clinician should be to isolate the skill of difficulty as much as possible. If the child is having difficulty producing present progressive verb tense and the -ing form of the verb is targeted during an activity, then the child should work only toward imitating the verb form. If an activity is too complex, the child will use his learning resources to complete the activity as well as to learn the language form. This dual goal may overwhelm the child, such that he may not be successful.

The new clinician should clearly understand the difference between a goal, any therapeutic scaffolding, and the activity used to target the goal in an intervention session. The goal is
the language behavior or milestone that the clinician targets during the therapy session (e.g., produce present progressive verb tense -ing). The therapeutic scaffolding includes models, cues, prompts, feedback, preparatory sets of information, structuring of the amount of language that the child must produce, and any environmental modifications. The activity is what the child and clinician engage in to practice the target goal behavior (e.g., playing Go Fish, reading a story and retelling it, playing with miniature toy figures or PlayDoh). The activity is neither the goal nor is it the scaffold. It is common for young clinicians who are just learning to navigate the clinical process to confuse these three concepts.

Scaffolding can take many different forms. A verbal model is an exact demonstration of what the clinician wants the child to do. For example, if you want the child to produce the possessive s, then you might take 10 opportunities during a play activity with Sesame Street figures to model Ernie’s car, Bert’s car, Cookie Monster’s car, and so forth. Always give the child plenty of time to process your model and imitate you. Perhaps the child will repeat Ernie car, without the possessive s. In such a case, the child may need an extra scaffold to make the target morpheme more salient. One scaffold could be a tactile cue. With a tactile cue, the clinician might say Ernie’s car while running her finger along the child’s hand while producing the possessive s. The tactile cue will highlight the important aspect of the language in a second sensory modality, making it more salient for the child. For older children, more verbal cues and prompts would be appropriate because such children should have reached a level developmental level and be able to understand them.

In the previous example, the clinician provided a model of the possessive s within a phrase—not a sentence or in conversation. Controlling the amount of language surrounding the target scaffolds the child because having more language around the target increases the difficulty of perceiving and producing it.

Feedback as a scaffolding tool helps children see, hear, or feel their own behavior as they practice. Some feedback tools include a mirror, an iPod with microphone, or a video recorder. Perhaps the clinician audio-records the child’s practice. After each trial, the clinician and the child can then listen to the child’s responses together, and the child can determine which trials were accurate or in error. This type of activity would be appropriate for an older child.

Understanding developmental milestones will help the clinician decide which types of cues, prompts, and feedback are appropriate for the child. When a goal is first introduced, the clinician’s intention is to provide the most scaffolding needed for a child to produce the behavior. Having the correct level of scaffolding ensures the child practices the accurate behavior or skill as often as possible. It is important to remember that the clinician wants the child to have good practice on most, if not all, of the trials administered.
Accuracy may be measured using one of several conventions, including a percentage of trials (i.e., number of accurate productions ÷ total number of trials administered; 7/10 = 70%), or a frequency count within an interval of time (e.g., 5 times within a 10-minute activity). If the child is not achieving more than 50% accuracy with a goal, then the child is practicing the incorrect behavior just as much (or more) than the desired behavior. This 50% accuracy marker relates to chance levels of performance, as determined statistically. When the child is less than 50–65% accurate, the clinician must reassess the scaffolds, his or her expectations of the child, and the complexity of the activity being used. One option may be for the clinician to increase or change the type of scaffold provided to the child, or to train component parts to the goal. Over time, the scaffolds should be faded away so that the child becomes independent in his skills.

Another part of the intervention process is parent training and a home program. Education of the child’s parents and other caregivers is ongoing and essential for the child to generalize what she is learning in therapy to her daily living environments (e.g., home, school, playground).

### CASE STUDIES

Three case studies are referred to throughout this text to illustrate the discussions of the various topics in language development. Johnathon, Josephine, and Robert are toddlers who were evaluated because their mothers were concerned about their language development. Each evaluation report reviews the child’s background history, clinical findings, diagnosis, prognosis, and recommendations.

Although Johnathon’s mother expressed concern regarding her son’s development, the evaluation found him to demonstrate typical language development (TD). In contrast, Josephine and Robert each show a language delay. Josephine’s delay is characterized predominately by a delay in expressive language, whereas Robert’s delay is more encompassing, including delays in receptive and expressive language as well as delays in gesture and play domains. Josephine is considered to have a better prognosis for outgrowing her language delay because she has strengths in receptive language, play, and gesture development. Research shows that children with strengths in these areas tend to fare better than children like Robert, who show delays in the expressive and receptive language, gesture, and play domains. Josephine is referred to as a late bloomer (LB), and Robert is referred to as a truly late talker (LT).

The idea to be noted here is that although both Josephine and Robert demonstrate delayed language development at their evaluations, their prognosis for developing age-appropriate language by later in the preschool years differs. Children who demonstrate language delays like those experienced by Robert are more likely to have persistent language delays into the preschool years and beyond. By four years of age, children like Robert are more likely to be diagnosed with specific language impairment (SLI).
Johnathon (TD)

Sex: Male
Age: 25 months

SIGNIFICANT HISTORY

Johnathon is a 25-month-old boy who was referred to this appointment to assess the status of his speech and language development. His mother was concerned that Johnathon was not yet formulating sentences and questioned his vocabulary development. Johnathon’s prenatal/birth history was unremarkable. He was born at term weighing 8 pounds, 4 ounces. Medical history was fairly unremarkable, with the exception of one ear infection at 12 months and occasional colds. Developmental milestones were met in a timely manner. For example, he sat without support by 6 months and walked by 12 months. Speech-language history was fairly unremarkable, with first words emerging by 12 months. Johnathon was recently combining words. He followed age-appropriate directions, including those without contextual support (e.g., “Bring me your bottle”). Johnathon ate a full-textured diet. He was enrolled in a daycare program three mornings each week. He was described as interactive and enjoyed playing with a variety of toys. Family history was negative for speech-language disorders.

CLINICAL PROCEDURES

Tests

MacArthur Communicative Development Inventory (MCDI)
Rossetti Infant–Toddler Language Scale (RITLS)

Other

Play-based interaction
Spontaneous speech-language sample
Oral mechanism exam

CLINICAL FINDINGS

General Observations

Johnathon was a pleasant and interactive boy. He readily entered the playroom with his mother and separated without difficulty to explore the room. Breaks in attention generally occurred when a task was more difficult for him to complete such as those considered more appropriate for an older toddler.
Case Studies

Play
Johnathon’s play skills were typical of same-age peers. He demonstrated play skills most typical of a 21- to 24-month-old, with skills continuing to emerge at the 24- to 27-month-old levels on the RITLS. Johnathon used most toys appropriately and chose toys selectively. He readily linked functional play schemes around familiar themes (e.g., doll play) and was observed to use objects symbolically (e.g., he put a toy key to his ear to represent a telephone).

Nonverbal Communication
Johnathon demonstrated communicative eye contact, turn-taking ability, and joint attention during the evaluation. Gestural communication was a strength for him. He demonstrated the prelinguistic gesture sequence of showing, giving, and pointing to objects and often combined these with spoken utterances.

Receptive Language
Johnathon responded to environmental sounds and to his name. His attention to verbal requests and comments was inconsistent only when commands were considered more advanced for his age. His performance on the RITLS was most typical of a 21- to 24-month-old toddler with a scatter of skills up to 24- to 27-month age levels. He completed single-step commands (familiar and novel) and chose familiar objects from an array of objects. More complex commands (e.g., two requests with one object, two-step related directives) were followed with gesture cues. His mother reported that Johnathon understands new words rapidly.

Expressive Language
Johnathon’s performance on the RITLS was most typical of a child 21 to 24 months of age, with a scatter of skills up to the 24- to 27-month-old age level. For example, Johnathon used new words, combined words, and produced a self-referent. He was just beginning to use many action words and relate personal experiences. Johnathon used language to fulfill a full range of communicative functions. For example, he initiated interactions verbally with adults, responded to adult utterances, and requested assistance from adults in his environment. On the MCDI, Johnathon’s mother reported him to have 212 words, which placed him at the 30th percentile for his age. His use of early developing morphosyntax was also considered to be at the 30th percentile for his age (e.g., -ing, plural s).

Phonology
Johnathon was at least 60% intelligible to this unfamiliar listener. His intelligible utterances were predominately single words and word combinations. Attempts at longer utterances resulted in reduced articulatory precision. Jargon was heard infrequently.
His phonological repertoire included a full repertoire of stop, nasal, and glide sound classes as well as the early-developing fricatives /h/ and /f/. Consonant substitutions were considered developmentally appropriate (e.g., /θ/ for /s/, reduced lingual tension of /r/). Johnathon produced a full repertoire of singleton vowels and occasional diphthongs. His syllable shape repertoire was predominately restricted to open syllables (CV /maɪ/, VCV /odɛ/, CVCV /wowo/). However, final consonants were emerging. The following phonological processes were heard and considered developmentally appropriate: cluster reduction, stopping of later developing fricatives (/s, z, θ, ð/).

**Oral–Motor Examination**

Structure, function, and sensation of the oral–facial musculature appeared to be sufficient to support speech and language development.

**DIAGNOSIS AND PROGNOSIS**

Johnathon is a pleasant 25-month-old toddler who presents with receptive and expressive language skills that are consistent with a child his age. Play, oral-motor, gesture, and attention skills appear to be age appropriate and sufficient to support continued language development.

**RECOMMENDATIONS**

Results from this evaluation were discussed with Johnathon’s mother today. Speech-language intervention is not warranted at this time. Johnathon’s mother was educated and counseled regarding typical cognitive and language development. She was encouraged to return to this clinic for reevaluation if at any time she was concerned about subsequent stages of Johnathon’s language development. She was agreeable.

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**JOSEPHINE (LB)**

**Sex:** Female  
**Age:** 22 months  

**SIGNIFICANT HISTORY**

Josephine is a 22-month-old girl who was referred to this appointment due to continued concerns about her limited expressive vocabulary. Josephine’s *prenatal/birth* histories were unremarkable. She was born at term weighing 7 pounds, 2 ounces. *Medical/health* history was significant for pneumonia at 19 months and two ear infections...
since that time. She had known allergies to dust and mold. Josephine’s hearing was recently evaluated and found to be within normal limits. Developmental milestones were reached in a timely manner (e.g., sat at 6 months, walked at 11 months).

Josephine’s speech-language development was remarkable for limited vocalizations during infancy, including little babbling. Her first word was delayed until 15 months, and her mother believed Josephine to have a small vocabulary for her age. Her primary means of communication were gesturing and attempting to produce phoneme sequences that marked two syllables, but these utterances did not approximate known words. Marking two syllables was a recent accomplishment. Her mother stated that Josephine did not readily imitate words and had isolated instances of accurate word production, but the latter behavior was inconsistent. Josephine was beginning to demonstrate frustration with communication breakdown. Her strengths appeared to be in the domains of play and receptive language. Josephine followed two-step directions that required her to leave the immediate context (e.g., “Go to the family room and get your diaper”). Josephine ate a full diet at the time of this evaluation.

Josephine was evaluated for speech and language previously by her state’s early intervention program. Results revealed a delay in expressive language. She was subsequently enrolled in language therapy, once weekly for the past two months. Josephine was otherwise cared for by her mother in the home. Family history was negative for speech-language disorders.

**CLINICAL PROCEDURES**

**Tests**

- MacArthur–Bates Communicative Development Inventories (CDIs)
- Rossetti Infant–Toddler Language Scale (RITLS)

**Other**

- Play-based interaction
- Spontaneous speech-language sample
- Oral mechanism exam

**CLINICAL FINDINGS**

**General Observations**

Josephine was a delightful and interactive child who readily transitioned to the playroom without difficulty. She regulated her behavior well and showed age-appropriate attention to all tasks.
Josephine’s play development was well within normal limits (WNL) for her age. She demonstrated a scatter of skills up to at least the 27- to 30-month age level. For example, she readily performed many related activities during play, and she selectively chose and used toys appropriately. Josephine engaged in spontaneous doll play (e.g., covered the doll with a blanket; fed it a bottle, a spoon, and miniature food items; hugged it), and she pretended to talk on the phone and to write. She demonstrated symbolic play such as blowing on food during pretend cooking activity.

Nonverbal Communication
Josephine demonstrated the prelinguistic skills of communicative eye contact, joint attention, and turn-taking throughout the evaluation. She often used prelinguistic gestures (show, give, point) and iconic gestures (e.g., hand under cheek to indicate sleeping) to communicate and engage the clinician. Her performance on the RITLS was considered well WNL. Pragmatic skills were limited only by her sparse expressive language. However, nonverbal aspects of pragmatic development were WNL.

Receptive Language
Josephine’s comprehension of language was well WNL with a scatter of skills up to at least the 24- to 27-month age level. For example, at this age level Josephine understood the concept of one and recognized family member names. At her age level (21–24 months), she chose one object from a group of five, and followed novel and two-step related commands. She understood new words rapidly by her mother’s report. She readily responded to her name.

Expressive Language
Compared to her receptive language abilities, Josephine’s expressive language was significantly delayed. On the RITLS, she presented with skills most typical of the 9- to 12-month age level. However, Josephine did not readily engage in spoken imitation or consistently use spontaneous vocalization, babble, or jargon, which typically emerges during that stage of development. The use of routine carrier phrases such as “Ready, get set” facilitated her expression (i.e., /go/). She was not yet using adult-like intonation or using words rather than gesture to communicate. Her strengths were that she used early phonemes (/t, d, n/), woke with a communicative call, shook her head “no” (and “yes”), and combined gesture and vocalization to communicate (12- to 15-month age level). By her mother’s report on the MCDI, Josephine had seven words in her expressive vocabulary, which is most typical of a 12-month-old at the 50th percentile and consistent with her RITLS performance.
Phonology
Josephine’s spontaneous vocalizations were limited in number and were less than 50% intelligible. Given her few spontaneous vocalizations, her phonological repertoire was judged to include the consonants /b, d, g, n, m, j, s, ʧ, ʔ/, the vowels /ɑ, a, ɪ, o, u/, and the diphthongs /au, ai/. Her syllable shape repertoire included C /s/, CV /do/, CVC /nam/, CVCV /daga/, CVCVV /dagat/. She occasionally produced brief periods of reduplicated babble (e.g., /nanomaʔo/). In addition, she produced a prolonged /s/ while playing; /h/ was elicited through playful, nonspeech imitation. Meaningful productions of /g/ were fronted (/do/ for /go/).

Oral-Motor Examination
Structure, function, and sensory aspects of the mechanism appeared to be within functional limits (WFL) and sufficient to support speech development. For example, Josephine presented with neutral jaw posture at rest, good lip rounding for /u/ in spontaneous utterances, and tongue tip elevation for the production of alveolar phonemes /d, n/.

DIAGNOSIS AND PROGNOSIS
Josephine is a delightful 22-month-old who demonstrates a mild to moderate delay in expressive language and a moderate delay in speech sound development. Her expressive language delay is characterized by limited vocalizations including babbling, jargon, or word approximations; a small vocabulary; and a delay in combining words. Her speech sound delay is characterized by a phonological and a syllable shape repertoire that are smaller than expected, particularly in terms of her vowel repertoire. Other aspects of language and cognition (prelinguistic skills, receptive language, and play) are well within normal limits.

Prognosis is good that Josephine will outgrow her expressive language delay given her established prelinguistic skills, strong play and receptive language abilities, reliance on gesture to communicate, and ability to imitate gestures. Of concern are her restricted vocalizations and limited imitation of speech, particularly given her good imitation of gestures.

RECOMMENDATIONS
1. Continue to enroll Josephine in speech-language therapy through her state’s early intervention program. It is recommended that intervention goals target parent education and training of language facilitation techniques (e.g., recasts,
expansion, parallel talk). These techniques can be used throughout the day with Josephine during functional activities.

2. Reevaluate Josephine’s speech and language skills through this clinic in 12 months to assess her progress toward age-expected milestones.

ROBERT (LT)

Sex: Male
Age: 27 months

SIGNIFICANT HISTORY

Robert is a 27-month-old boy who was referred to this appointment to reassess the status of his speech and language development. Robert’s prenatal/birth history was significant for maternal pre-eclampsia and cesarean section delivery at 31 weeks gestation. He was admitted to the neonatal intensive care unit for 3 months after birth. Medical history was remarkable for heart murmur, VSD (Ventricular Septal Defect—s/p repair), hypothyroidism (Synthroid prescribed), gastroesophageal reflux (Prevacid prescribed), asthma (Pulmacort and Xopanex prescribed), and failure to thrive. History was negative for ear infections but audiological testing revealed questionable unilateral hearing loss in the left ear. An audiological reevaluation was planned for within 6 months.

Developmental milestones were delayed for motor, speech-language, and feeding development. For example, walking was delayed until 17 months (adjusted age), and at the time of this evaluation he was not yet eating a full diet of textured foods. Speech-language history was remarkable for a delay in speaking first words (18 months, adjusted age) and he was not yet combining words. He followed simple directions (e.g., “Sit down”), but his mother believed Robert to have limited attention skills for his age.

Robert had a history of early intervention. At the time of this evaluation, he had received physical therapy, occupational therapy, and speech-language therapy through an early intervention program. Robert was enrolled in a daycare program five days each week. He was described as happy and enjoyed playing with other children. Family history was remarkable for an uncle diagnosed with specific language impairment as a child.
Case Studies

**CLINICAL PROCEDURES**

Tests
- MacArthur–Bates Communicative Development Inventories (CDIs)
- Rossetti Infant–Toddler Language Scale (RITLS)

Other
- Play-based interactions
- Spontaneous speech-language sample
- Oral mechanism exam

**CLINICAL FINDINGS**

**General Observations**
Robert was an interactive and pleasant boy who readily entered the playroom with his mother. Consistent with his mother’s report, Robert presented with limited attention skills for his age. He became easily excitable and disorganized in his behavior. His attention and behavior were more typical of a child approximately 12 months of age. For example, he did not remain engaged in a play activity for very long but preferred to wander around the room or hide under the table. Robert was motivated to interact with adults and imitated adult models. These behaviors were strengths for him.

**Play**
Robert’s performance on the RITLS revealed established play skills at the 9- to 12-month age level, with a scatter of emerging play skills up to the 21- to 24-month age level. His play was characterized predominately by banging/shaking objects and relational play (placing objects within each other). Functional use of objects was emerging, but functional play schemes were not part of his established play repertoire. Robert engaged in simple games, and he showed an emerging ability to perform actions with objects (e.g., throw a ball) and imitate adult actions (e.g., put a key in a door). He was not yet pretending with stuffed animals or dolls.

**Nonverbal Communication**
Relative to Robert’s other skills, his prelinguistic communication was a strength for him. His gesture performance was most typical of a 9- to 12-month-old child on the RITLS, with a scatter of skills up to the 21- to 24-month-old level. He consistently demonstrated communicative eye contact, joint attention, and turn-taking behaviors (both verbal and nonverbal), as well as prelinguistic gestures (e.g., showing objects, giving objects, pointing, requesting). He used gesture to satisfy basic needs (e.g., nods head “no,” leads caregiver to desired object, indicates diaper is wet).
Receptive Language

On the RITLS, Robert’s comprehension skills were most typical of a 9- to 12-month-old child, with a scatter of skills up to the 21- to 24-month age level. For example, he responded to simple commands (e.g., “Give me”), responded to requests to say words, and chose two objects from an array of objects. However, he did not show interest in pictures, identify body parts, or follow commands that required him to complete two actions with an object. Robert demonstrated inconsistent attention to his name. He was also inconsistent in attending to gesture cues meant to scaffold his comprehension of spoken language.

Robert had difficulty attending to formal tests of receptive vocabulary, so the MCDI: Words and Gestures test was used informally to survey his comprehension of vocabulary. His performance on the MCDI revealed a receptive vocabulary of at least 194 items across a variety of categories, including clothing, household items, people, and descriptive words. This vocabulary size is considered typical of toddlers 18 to 24 months of age (normative range = 150–500 words; Miller & Paul, 1995).

Expressive Language

On the RITLS, Robert’s expressive language was assessed to be most typical of a 9- to 12-month-old, with a scatter of skills up to the 15- to 18-month age level. His spontaneous vocalizations were predominately characteristic of reduplicated babbling and emerging variegated babbling (e.g., /mamamam/, /mimɪ/). Robert was not yet jargoning consistently or producing words within jargoned utterances. He was not yet combining pointing with words. Robert used fewer than 10 intelligible words during this session, but those expressed were for imitation (e.g., /nɛ/ for night-night) or for spontaneous naming (e.g., /o/ for telephone). His mother reported an expressive vocabulary of 14 words. His expressive vocabulary included 2 sound effects/animal sounds (i.e., baa, uh oh), 2 vehicles (bus, car), and several toy and routines items (night-night, hi, bye). Early developing morphemes (e.g., -ing) and early word combinations were not observed or reported (normative age range for emergence = 18–24 months).

A strength for Robert was his motivation to use spoken vocalizations to interact with others for a variety of pragmatic functions, including protest, response, initiation, and labeling. However, he was not yet engaging in adult-like dialogue or taking turns in conversation. He relied on gesture and vocalizations instead of words.

Phonology

Robert was less than 25% intelligible. His sound and syllable shape repertoires were most typical of a child 12 to 18 months of age. His phonological repertoire included a restricted set of consonants (/m, n, p, b, d, j, l, v, ?/), vowels (/i, ɪ, ɛ, e, ʌ, ʊ, o, a/), and a diphthong (/aʊ/). The following phonemes were not heard: /t, k, g, f,
æ,  u, œ, ɔɪ/. With immediate verbal models, the diphthong /aɪ/ was elicited in *night*.

Robert’s syllable shape repertoire was restricted to simple open syllables such as CV, V, VCV, and CVCV (e.g., /ba/, /o/, /ʌda/, /mimɪ/). Robert attempted to imitate words heard in conversation today. His attempts were largely accurate for simple syllables, with the exception of slight vowel distortions or diphthong reductions (e.g., /ba/ for *bye*) and final consonant deletions (e.g., /opɛ/ for *open*). Spontaneous productions of multisyllable words resulted in phonological simplifications (e.g., /o/ for *telephone*).

**Oral–Motor Examination**
Structure, function, and sensory aspects of the mechanism appeared to be largely within functional limits to support continued speech and language development, with the exception of reduced range of facial–labial movements for rounded phonemes and slightly reduced strength of facial–labial muscles for full and consistent bilabial plosion.

**DIAGNOSIS AND PROGNOSIS**
Robert is a delightful and engaging 27-month-old who demonstrates mild to moderate delays in speech as well as receptive and expressive language development. In addition, other cognitive areas that affect speech and language development present as delayed, including play, gesture, and attention skills. His speech, language, gesture, and play development are most typical of a 12- to 15-month-old child, with a scatter of emerging abilities up to the 21-month age level. His speech delay is characterized by reduced intelligibility owing to a small phoneme and syllable shape repertoire, and to a lesser extent by some subtle oral–motor weakness. His expressive language delay is characterized by a small expressive vocabulary, no jargon or use of jargon with words, and delay to combine words. His receptive language delay is characterized by inconsistent attention to spoken language, a small vocabulary, and limited comprehension of age-level directions.

Robert is at risk for continued speech and language delays given his delays in comprehension, play, and gesture. Prognosis for gains to be made with speech-language therapy appears to be good because his established prelinguistic social skills and his motivation to imitate adult models. Ongoing assessment of his attention development, auditory processing skills, and questionable hearing loss will need to be made to determine the etiology of his comprehension performance.

**RECOMMENDATIONS**
It is recommended that Robert continue to be enrolled in speech-language therapy. A play-based approach to intervention is most appropriate for him. Gesture and
multimodal cueing will facilitate imitation (verbal and nonverbal) and development in a variety of skill areas (speech, language, play). Robert’s attention, auditory processing skills, and questionable hearing loss should be continually assessed to determine how each contributes to his comprehension performance. Goals of speech-language intervention should include the following:

**Long Term Goal 1:** Robert will demonstrate developmentally appropriate attention skills to support continued social–emotional, cognitive, and language development.
- **Short Term Goal 1:** Increase intervals of sustained attention to objects, activities, and books.

**Long Term Goal 2:** Robert will demonstrate developmentally appropriate play skills to support continued social–emotional, cognitive, and language development.
- **Short Term Goal 1:** Expand Robert’s play repertoire to include object exploration, cause–effect toys, and functional play schemes.
- **Short Term Goal 2:** Expand Robert’s play repertoire to include symbolic play schemes and linking of play schemes for pretend play.

**Long Term Goal 3:** Robert will demonstrate developmentally appropriate receptive language skills to support functional communication and pre-academic development.
- **Short Term Goal 1:** Facilitate Robert’s ability to direct attention to language spoken to him.
- **Short Term Goal 2:** Expand Robert’s receptive vocabulary of words that are part of his daily routines.
- **Short Term Goal 3:** Increase comprehension of unfamiliar one-step directions that include identification of objects.

**Long Term Goal 4:** Robert will demonstrate developmentally appropriate expressive language skills to support functional communication and pre-academic development.
- **Short Term Goal 1:** Increase expressive vocabulary for functional communication that includes naming and requesting. Initial vocabulary targets should be organized around themes such as animals, body parts, household items, doll play, and vehicles.
- **Short Term Goal 2:** Establish use of personal identification by name (Robert) and early pronouns (me, mine).
- **Short Term Goal 3:** Establish Robert’s ability to combine words that express early semantic relations.
Short Term Goal 4: Establish Robert’s ability to produce early developing morphemes to mark present progressive tense (-ing) and spatial relations (in, on).

Long Term Goal 5: Robert will demonstrate developmentally appropriate speech intelligibility to support functional communication and pre-academic development.

- Short Term Goal 1: Expand Robert’s phonological repertoire to include velar stop consonants (/k, g/), alveolar stop /t/, and early-developing fricatives (/f, h/).
- Short Term Goal 2: Expand Robert’s syllable shape repertoire to include closed syllable shapes (CVC, CVCVC, VC).

KEY TERMS
assessment
background history
evaluation
formal testing
functional communication context
intervention
language
milestones
morphology
phonology
pragmatics
scaffolds
semantics
speech-language pathologist
spontaneous language sampling
syntax
treatment

STUDY QUESTIONS
- Define language and its five domains.
- What are the procedures of a language evaluation?
- How do clinicians use their knowledge of developmental milestones in the clinical practice of speech-language pathology?
- Compare and contrast long-term goals, short-term goals, and session objectives.
- What are some scaffolds that a clinician might use in language therapy?

REFERENCES


