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Language Development

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BACKGROUND AND DEVELOPMENT

What is language? Language has been hailed as the hallmark of humanity, the ability that separates humans from animals (Berko-Gleason, 1997). As humans in society, we use our language ability continuously to embrace ideas, share our feelings, comment on the world, and understand each other's minds. *Language* can be defined as an organized system of arbitrary signals and rule-governed structures that are used as a means for communication. Language occurs both receptively and expressively through reading, listening, writing, and speaking. In order to become fully functioning members of school and society, children must learn the elements, the rules, the structure, and the conventions of this system.

Our working definition of language encompasses five structural components: phonology, semantics, syntax, morphology, and pragmatics. *Phonology* refers to the sounds and the intonation patterns that are associated with spoken language. *Semantics* encompasses the words of a language and the meanings associated with those words. *Syntax* describes the grammatical rules of a language—how words combine into phrases and sentences. *Morphology* refers to the rules that govern the use of morphemes. Morphemes are the smallest units of meaning in a language, including the prefixes and suffixes that mark syntactic and semantic information, such as number (i.e., plurals), gender, and tense (i.e., past, present, or future). Finally, *pragmatics* is how we adjust our speech to our audience and use language toward the goal of communication.

To better address typical and atypical language development as well as strategies of prevention and intervention, the five structural components of language may be simplified into three essential aspects of communication: content, form, and use (Bloom & Lahey, 1978). *Content* refers to the semantics of language—the concepts and ideas that are encoded in words. *Form* is the way in which meaning is represented, including speech, sign language, and writing. In the context of spoken language, form encompasses phonology, morphology, and syntax. Finally, *use* refers to the function of language in context. Although each of these aspects of language can be identified separately, they are inherently interconnected elements in communication (Bloom & Lahey). Language problems may arise when there is a disruption within any one component of the model or in their integration. The following sections consider the typical development of each of these aspects of language.

Language Content

Relations between words and their referents are arbitrary and symbolic. Words themselves do not lend the language learner any clues to the identity of what is being labeled. Thus, learning the meaning of words involves learning how one's own language community labels content in the world. This is not an easy task. Consider, for example, seeing a rabbit hopping by and hearing the word *rabbit*. How does one know whether the word applies to the whole rabbit or to its fur? To its twitching whiskers or to its hopping? Research suggests that even very young children are guided in this

initial word-to-referent mapping by a default set of assumptions or predispositions (see Woodward & Markman, 1998, for a review of these principles). Hypotheses based on these assumptions are then supplemented by input and feedback from mature speakers, allowing children to test and revise their label-to-referent mappings in order to conform to those of their speech community (see Table 1 for developmental milestones of language content).

The semantic achievement of the production of the first word typically occurs around the child's first birthday; however, it may appear as early as 8 months or as late as 16 months without indicating serious concern. By this time, children have already been exposed to a great deal of language and possess a receptive vocabulary of about 50 words (Fenson et al., 1994). Once vocabulary learning begins, progress is slow and measured. However, by 18 months of age productive vocabularies typically expand to about 50 words. Great individual differences appear during this period. For example, although at 16 months the average number of words a baby can say is 40, the top 10% of 16-month-olds can say 180 words, and the bottom 10% can say fewer than 10, and in some cases none at all (Fenson et al., 1994). This variation among children is completely normal and should be expected.

During the toddler, preschool, and school years, children continue to acquire a varied lexicon. Semantic development expands from the concrete nouns of infancy to complex, abstract, and relational concepts, such as words for actions, emotions, and colors; and deictic terms, such as *I, you, this*, and *that*. Children also make connections among the words in their vocabulary, building a complex network of interrelated words and concepts. Semantic development does not end in childhood. Even into adulthood we continue to add new words to our lexicon (e.g., blog and latte), and fine-tune the content of our communication as we increase our knowledge and experiences (see Pan, 2001, for a review of semantic development).

Language Form

For typically developing children, sensitivity to language *form* originates in the womb (see Golinkoff & Hirsh-Pasek, 1999, for a review). The growing fetus can hear a number of sounds generated both inside and outside of the mother's abdomen. As a result of these experiences, infants at birth are already familiar with some of the phonology of their language, including its intonational patterns and prosodic contours (see Table 2 for developmental milestones of language form). Young infants also enter the world able to discriminate between most of the sounds that are used in language, including those in languages to which they have never been exposed.

Soon after birth, infants begin to make noises of their own, beginning with vegetative sounds, cooing, and laughing (see Vihman, 1996). By about 4 months of age the nature of these noises changes as infants begin to manipulate their vocal apparatus in vocal play. Starting around 6 or 7 months of age, cooing develops into real, language-like sounds, called *babbling*. A significant language milestone, babbling consists of sequences of consonant–vowel syllables (e.g., "mamama"). Though babbling is itself meaningless, it is through babbling that infants are able to experiment with producing the sounds of their language. Infants' ability to hear their own vocalizations and those of the people around them takes on increased importance during this period, and babies who are deaf produce fewer well-formed syllables than their hearing counterparts (Oller & Eilers, 1988). The final stage of prelinguistic vocalization, the *jargon* stage, generally overlaps with the child's first true words. Beginning at around 9 to 12 months of age, jargon consists of strings of sounds and syllables produced with the rich variety of stress and intonation that mimic the sounds of adult speech. Although not all babies engage in jargon, its presence is an indicator that children have nearly mastered the sounds of their language; they have only to formulate those sounds into approximations of meaningful words (see Vihman, 1996, for a review of early phonological development).

The next crucial milestone in the development of language form occurs when the child discovers that rule-based combinations of words actually express more than the meaning of any of the individual words. For example, by 17 months children are able to discriminate between "Cookie Monster is tickling Big Bird" and "Big Bird is tickling Cookie Monster" (Hirsh-Pasek & Golinkoff, 1996). Comprehension of these rule-based combinations comes prior to production using these rules.

Children begin to combine words into two-word utterances (e.g., "car go" and "more juice") between 18 and 24 months. These early word combinations express meaningful relationships yet tend to be missing function words (*the*, *a*), auxiliary verbs (*am*, *is*, *has*), and the bound morphemes that mark plural (*s*), possessive (-'*s*), or tense (*-ing*, *-ed*). As children learn to combine words into longer sequences, they add the function words and bound morphemes that were absent from their first

Table 1 *Milestones of Language Content*

Typical Age	Content Milestones
8–12 mos.	Understand 3–50 words. First words are used for names of familiar people and objects; communicative games and routines; to talk about appearance, disappearance, recurrence.
12–18 mos.	Average expressive vocabulary size: 50–100 words at 18 mos. Semantic roles are expressed in one-word speech, including agent, action, object, location, possession, rejection, disappearance, nonexistence, denial. Words are understood outside of routine games; still need contextual support for lexical comprehension.
18–24 mos.	Average expressive vocabulary size: 200–300 words at 24 mos. Prevalent relations expressed: agent–action, agent–object, action–object, action–location, entity–location, possessor–possession, demonstrative–entity, attribute–entity.
24–30 mos.	Understanding and use of questions about objects (What?), people (Who?), and basic events (What is x doing? Where is x going?).
30–36 mos.	Use and understand *Why?* questions. Use and understand basic spatial terms (*in*, *on*, *under*, etc.).
36–42 mos.	Use and understand semantic relationship between adjacent and conjoined sentences, including additive, temporal, causal, contrastive. Understand basic color words. Use and understand basic kinship terms.
42–48 mos.	Use and understand "when" and "how" questions. Understand words for basic shapes (circle, square, triangle). Use and understand basic size vocabulary (big, small). Use conjunctions *and* and *because* to conjoin sentences.
48–60 mos.	Knowledge of letter names and sounds emerges. Knowledge of numbers and counting emerges. Use conjunctions *when*, *so*, *because*, and *if*.
5–7 years	Reorganization of lexical knowledge from episodic to semantic networks occurs. Average expressive vocabulary size: 5,000 words.
7–9 years	School introduces new words not encountered in conversation. Pronouns used anaphorically to refer to nouns previously named. Word definitions include synonyms and categories. Some words understood to have multiple meanings. Capacity for production of figurative language increases.

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Table 1 *Continued*

Typical Age	Content Milestones
9–12 years	Vocabulary in school texts is more abstract and specific than that in conversation. Students are expected to acquire new information from written texts. Can explain relationships between meanings of multiple-meaning words. Begin using adverbial conjunctions. Understand most common idioms.
12–14 years	Abstract dictionary definitions given for words. Can explain meaning of proverbs in context.
15–18 years	Average vocabulary size of high school graduate: 10,000 words.

Note. From *Language Disorders From Infants Through Adolescence: Assessment and Intervention*, by R. Paul, 2001, Philadelphia: Mosby. Copyright 2000 by Elsevier. Adapted with permission. Based on previous works of Chapman (2000), Miller (1981), Nippold (1998).

word combinations. Negative sentences and questions join the simple declarative sentences of early childhood. Finally, complex, multiclause sentences appear (see Tager-Flusberg, 2001, for a review of the development of syntax and morphology).

Although most grammatical structures are in place by the age of 5, children continue to acquire more complex forms and rules of grammar in the school setting. Here the focus of language development expands to incorporate written communication, including reading and writing. Learning to read and write requires the active analysis of certain aspects of language that were experienced only passively by the younger child. One example of this is *phonemic awareness*, or the understanding that letters map to sounds and that those sounds can be combined to make words. The ability to read and write dramatically transforms the language learner. Through these new language experiences, children gain *metalinguistic competence*, or the ability to conceptualize, reflect upon, and analyze language as an entity in and of itself (see Nippold, 1998, for a review of later language development).

Language Use

Children learn to communicate long before they develop the form and content of language (see Table 3 for milestones of language use). Infants are born with a repertoire of affective behaviors that allow for the communication of basic needs, and as early as the first year of life they are able to further communicate their intention to others through a combination of eye gaze, vocalization, and gesture (e.g., Harding & Golinkoff, 1979). Although initially infants are unaware of the impact of these prelinguistic behaviors, the consistent and contingent responses of caregivers during early protoconversational exchanges highlight and teach the communicative nature of language (Sachs, 2001).

Through interaction with family, peers, teachers, and caregivers, children learn *communicative competence*, or how to use language appropriately and strategically in social situations (Hymes, 1967). Because we use language for so many purposes, many skills are involved in communicative competence (see Becker-Bryant, 2001). Children need to learn to ask questions, make requests, give orders, express agreement or disagreement, apologize, refuse, joke, praise, and tell stories. They must learn social routines (such as saying "Trick or treat" on Halloween), terms of politeness, and ways to address others. Children must also understand how to initiate, maintain, and conclude conversations, as well as take turns, provide and respond effectively to feedback, and stay on-topic. Crucially, they must learn to be sensitive to their audience and to the situations in which they are communicating. Sophistication in pragmatics continues to develop throughout childhood and into adulthood.

Factors Contributing to Normal Growth and Development

The single most important factor contributing to the development of the content, use, and form of language is

Table 2 *Milestones of Language Form*

Typical Age	Form Milestones
0–8 mos.	0–2 mos.—vegetative sounds. 2–4 mos.—cooing, laughing. 4–6 mos.—vocal play.
8–12 mos.	6–10 mos.—canonical babbling (e.g., dadada), variegated babbling (e.g., digaba). Jargon babble with intonational contours of language being learned.
12–18 mos.	Production of first 50 words.
18–24 mos.	Understand basic semantic roles and relations. Two-word utterances and two-syllable words emerge. Word order is consistent. Utterances are "telegraphic," with few grammatical markers. Speech is 50% intelligible; 70% of consonant sounds produced are correct.
24–30 mos.	Grammatical morphemes appear. Early emerging acquisition: *-ing*, *in*, *on*, plural *s*. Use of *no*, *not*, *can't*, *don't* as negation between subject and verb. Questions formed with rising intonation only. Use of sentences with semi-auxiliaries: *gonna*, *wanna*, *gotta*, *hafta*. Awareness of rhyme emerges.
30–36 mos.	Present-tense auxiliaries appear. *Be* verbs used inconsistently. Overgeneralized past-tense forms appear. Speech is 75% intelligible at 36 mos. Ability to produce rhyme emerges.
36–42 mos.	Emergence of embedded sentences. First complex sentence forms appear. Auxiliary verbs are placed correctly in questions and negatives. Irregular past tense, articles (*a*, *the*), possessive *'s* acquired.
42–48 mos.	Early emerging complex sentence types, including full prepositional clauses, *wh* clauses, simple infinitives. Errors in production of *s*, *r*, *l*, *th* may persist.
5–7 years	Use and understanding of passive sentences emerges. Mastery of exceptions to basic grammar rules emerges. Ability to segment words into phonemes emerges. Understand concept of *word* separate from its referent.

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Table 2 *Continued*

Typical Age	Form Milestones
7–9 years	Literate language syntax needed for academic participation develops. A few errors in noun phrases ("much bricks") persist. Articulation is mostly error-free; some difficulty with complex words may persist (e.g., aluminum). Phonological knowledge is used in spelling.
9–12 years	Syntax used in school texts is more complex than that used in oral language. Use of word order variations increase in writing ("Near the pool I put a fence"). Metacognitive skills emerge.
12–14 years	Use of perfect aspect (*have/had* +[verb]) increases. Syntax used in writing is more complex than that used in speech. Knowledge of stress rules (yellowjacket vs. yellow jacket) is acquired.
15–18 years	Complexity in written language is greater than in spoken language. Full adult range of syntactic constructions reached.

Note. From *Language Disorders From Infants Through Adolescence: Assessment and Intervention*, by R. Paul, 2001, Philadelphia: Mosby. Copyright 2000 by Elsevier. Adapted with permission. Based on previous works of Chapman (2000), Miller (1981), and Nippold (1998).

input. To learn language, children must hear language and experience it being used in the context of communication. Accordingly, the most important factor contributing to the commencement of language development is infants' ability to hear. Research suggests that hearing problems, including those stemming from recurring ear infections in infancy and early childhood, may have long-term effects on language development ("Who has Hearing, Speech, and Language Problems?" 1995). However, hearing the sounds of language is not enough. Children must hear their world discussed and described to learn the intricacies of language. They must be invited to contribute to the conversation and allowed to experience language within a rich and stimulating linguistic environment.

Language is not taught explicitly; instead, it is learned through communication. Thus, the more opportunities children have to interact with other language users, the more linguistic input they have to analyze and learn from. Not surprisingly, research suggests that children exposed to larger amounts of adult input develop larger, richer vocabularies and more advanced syntactic skills than children exposed to more limited input (Huttenlocher, 1998). Parents and caregivers who encourage conversation, ask questions, and build on conversations that their children start, have children with more advanced language abilities (Hoff & Naigles, 2002).

Results from the National Institute of Child Health and Human Development (NICHD) Early Child Care Research Network (2000) likewise demonstrate that regardless of whether child care takes place at home, with family members, or in a formal child care setting, input is nevertheless crucial to language development. When teachers and caregivers talk to children, ask questions, and wait for answers, they create a more stimulating language environment. This environment results in children who know more letters, colors, and shapes at age 3 than children who are not addressed as frequently. Early language stimulation remains one of the best predictors of later vocabulary, reading, and mathematical skills.

PROBLEMS AND IMPLICATIONS

For most children, the development of language proceeds without difficulty. By the age of 5, typically developing children have mastered the building blocks of the system and are left only to refine and integrate their skills in order to use language in an increasingly complex range of tasks. During the course of the development of language, there is a tremendous range of what can be considered normal. Many harmless problems inevitably occur (e.g., sound substitutions, such as "f" for "th" in *birthday*;

Table 3 *Milestones of Language Use*

Typical Age	Use Milestones
0–8 mos.	Caregivers attribute intent to child's actions.
8–12 mos.	Intent expressed with gestures and vocalizations: requesting objects and actions, refusing, commenting, playing communicative games. Frequency of communicative acts: 2.5/min. of free play.
12–18 mos.	Words replace preverbal means in expressing intent. Frequency of communicative acts: 5/min. of free play.
18–24 mos.	Word use increases as preverbal communication decreases. New intents include requesting information, answering questions. Frequency of communicative acts: 7.5/min. of free play.
24–30 mos.	"Please" used for polite requests. New intents include symbolic play, talk about absent objects, misrepresentation. Narratives are characterized primarily by labels and descriptions.
30–36 mos.	Some requests for clarification provided. Use of language in play increases. Narratives express theme but no plot.
36–42 mos.	More flexibility in requesting, including permission directives (Can you … ?) and indirect requests (Would you … ?); direct requests decrease in frequency. Narratives express theme and some temporal organization.
42–48 mos.	New functions emerge, including reporting on past events, reasoning, predicting, expressing empathy, creating imaginary roles and props, and maintaining interactions.
48–60 mos.	Ability to address specific requests for clarification increases. Narratives express some plot but no high point or resolution.
5–7 years	Narratives are true stories expressing central focus, high point, and resolution.
7–9 years	Stories contain complete episodes with internal goals, motivations, and reactions of characters; some multi-episode stories appear. Language is used to establish and maintain social status. Increased perspective-taking allows for more successful persuasion. Provide conversational repairs: defining terms, giving background information. Begin to understand jokes and riddles based on sound similarities. Can perform successfully in simple referential communication tasks.

(Continued)

Table 3 *Continued*

Typical Age	Use Milestones
9–12 years	Stories include complex, embedded, and interactive episodes. Understand jokes and riddles based on lexical ambiguity.
12–14 years	Expository texts are used in school writing. Most information is presented in expository formats. Understand jokes and riddles based on deep structure ambiguity.
15–18 years	Language is used to maintain social bonds. Persuasive and argumentative skills reach near-adult levels.

Note. From *Language Disorders From Infants through Adolescence: Assessment and Intervention*, by R. Paul, 2001, Philadelphia: Mosby. Copyright 2000 by Elsevier. Adapted with permission. Based on previous works of Chapman (2000), Miller (1981), Nippold (1998).

over- or underextension of meaning, as when all animals are called *dog*; or overgeneralization of grammatical rules, as when children overapply "-ed" as a past-tense indicator, resulting in *goed* instead of *went*); nevertheless, more severe problems do arise.

Classification of Language Problems

The literature often draws a distinction between delay and disorder when discussing language. The term *delay* refers to language that is similar to that which would be expected from a younger child, whereas *disorder* refers to language that is qualitatively different from what is typical. In practice, however, this distinction is often unclear. Recent studies of the prevalence of language delay give an incidence of between 3% and 15% (Lees & Urwin, 1997). Yet these studies fail to agree about where the distinction between delay and disorder should be drawn. In this chapter, the following definition of language disorder, from the American Speech-Language-Hearing Association (1993), is used:

> A language disorder is the impaired comprehension and/or use of a spoken, written, and/or other symbol system. The disorder may involve (1) the form of language (phonology, morphology, syntax), (2) the content of language (semantics), and/or (3) the function of language in communication (pragmatics) in any combination. (p. 41)

Under the Individuals with Disabilities Education Act of 1997 (IDEA) a language disorder is recognized as a primary disability under the categories of speech or language impairment, specific learning disabilities, and developmental delay. Language disorders are also widely recognized as characteristic of other disabilities, particularly hearing impairment, mental retardation, autism, traumatic brain injury, and certain types of emotional disturbance. Students with severe language impairments typically are identified at an early age and receive speech or language therapy. However, a larger number of students experience more subtle language problems that become manifest as the demands of school increase. Table 4 describes the difficulties associated with each language dimension.

Language skills underpin all human interaction and are therefore crucial to children's success in school and society. As a result, problems with language have pervasive effects on the ability to read, write, and interact with others. A great deal of evidence links spoken language problems to reading disabilities (e.g., Catts, Fey, Tomblin, & Zhang, 2002). Children with early language impairment have been found to be at significantly higher risk for reading disabilities later in life. Attention to children's development of vocabulary, grammar, narrative structure and content, and other aspects of spoken language functioning is thus crucial in the early identification of children at risk for reading disabilities. In a study of normally developing children, Walker, Greenwood, Hart, & Carta (1994) found that general language skills acquired prior to age 5 predicted both reading and academic achievement in later grades. Anywhere between 50% and 100% of children with preschool speech and language disorders experience persistent language problems and academic difficulties (see Lewis, Freebairn, & Taylor, 2000). Language skills grease the wheels of human social

interaction. Thus, they are also related to children's acceptance into a group, the ease with which they form friendships, and their ability to interact appropriately with others.

Risk Factors for Language Problems

The causes of language problems are developmental in nature. Although no specific etiology has been found, three major risk factors for language delay have been identified (Olswang, Rodriquez, & Timler, 1998). The first is prolonged periods of untreated otitis media, or inflammation of the middle ear. Moderate hearing loss associated with otitis media may interfere with children's ability to decode and practice language. Second is a family history of language and learning problems. Approximately half of families of children with language impairments have at least one other family member who has a language problem (Spitz, Tallal, Flax, & Benasich, 1997). The final risk factor for language delay is parental characteristics, including a directive rather than responsive interaction style, high parental concern about children's language, and low socioeconomic status. With respect to the impact of socioeconomic status on language development, a study by Hart and Risley (1995) found that in an average hour of interaction with children under 3 years of age, professional parents (as compared with their working-class and welfare counterparts) used more words of all kinds, more multiclause sentences, more past and future verb tenses, more declaratives, and more questions of all kinds. The average number of words children heard per hour in professional families was 2,150, as compared with 1,250 in working-class families, and a mere 620 were heard per hour in welfare families. Given the cumulative effects of this variation in linguistic input, it is no surprise that socioeconomic status is associated with language impairment and success in school.

In addition to these risk factors, Olswang and colleagues (1998) have identified a series of behaviors in children in the 18- to 36-month range that are predictors of the need for language intervention. These include the following:

- A smaller than average vocabulary, including few verbs, a lack of variety of verbs, and a predominance of general verbs (e.g., make, go, do).
- A language comprehension delay of 6 months or a comprehension deficit with a large comprehension-production gap.
- Phonological problems, including limited vocalizations and restricted babbling.
- Few spontaneous vocal imitations and reliance on direct modeling in imitation tasks.
- Little combinatorial or symbolic play.
- Few communicative or symbolic gestures (e.g., pointing, waving).
- Behavior problems.
- Few conversational initiations.
- Difficulty interacting with peers as compared with adults.

When a toddler with slow language development shows significant risk factors, intervention is warranted.

ALTERNATIVE ACTIONS FOR PREVENTION

Though language impairment generally first becomes a serious challenge during the school years, the seeds of language problems are in place much earlier and relate to children's prior medical history and family life. Accordingly, early identification and intervention services for children thought to be at risk for language impairment remain the most promising methods of prevention. The role of school personnel, including school psychologists, in the prevention of language impairment is twofold. First, they should screen the hearing and language skills of all children upon entry into school, if not sooner. They also should assess the language skills of infants and preschoolers considered to be at risk for a language disorder based on results of screening or the presence of risk factors reviewed above. Older school-age students at risk for a language disorder also should be screened or monitored periodically for the need of services throughout their schooling (see Paul, 2001, for a review of screening and language assessment procedures). Early identification of hearing and language problems helps to ensure that children receive intervention to minimize the effects of delay on language development.

The second role of schools in the prevention of language impairments (as well as other impairments related to language) is the provision of preventive programs for children found during screening to be at risk for a language disorder. This finding would be indicated by low scores on screening measures, which are likely to reflect the risk factors discussed previously. Because language emerges from natural interactions that occur between children and their caregivers, early intervention programs

Table 4 *Language Difficulties*

Language Dimension	Difficulties
Use	Does not consider who the listener is, the familiarity of the listener, or the degree of formality of the situation or environment.
	Maintains poor eye contact, infringes on conversational partner's turn to speak, fails to maintain appropriate conversational distance.
	Does not consider perspective of listeners, including their ability to follow the speaker's train of thought, what and how much information to provide to them, and their verbal and nonverbal responses.
	Neglects polite terms and uses imperative statements inappropriately.
	Has difficulty with conversation initiation and topic maintenance.
Form	Has difficulty using possessives, past tense, prefixes, noun derivation (*-er*), adverb derivation (*-ly*), and *wh*-questions.
	Has difficulty learning rules for subject–verb agreement, reflexives, irregular past tense, irregular plural nouns, noun possessives, comparatives and superlatives, and auxiliary verbs.
	Has difficulty processing complex syntactic structures such as interrogatives and embedded, passive, and negative sentences.
	Has difficulty transforming sentences to create new sentences.
	Produces shorter, less elaborated sentences that lack syntactical complexity; relies on basic sentence structure.
	Ignores or omits word endings (plurals, verb tense, superlatives) and low-stress words (prepositions, conjunctions).
	Begins sentences with "um" or "uh," reflecting inability to order thoughts and words.
	Displays sound omissions or substitutions; demonstrates difficulty discriminating sounds.
Content	Displays restricted, literal, and concrete receptive and expressive word knowledge.
	Substitutes nonspecific words or phrases and indefinite terms for specific words when describing objects or events.
	Has difficulty using and understanding linguistic concepts (e.g., before/after, if/then, many, some, few), conjunctions, transition words, relational terms, and words with multiple meanings.
	Has difficulty understanding synonyms, antonyms, and verbal analogies and perceiving logical relationships among words.
	Has difficulty with figurative language, including idioms, proverbs, metaphors, similes, sarcasm, and jokes.

Note. Compiled from material presented in *Speech, Language, and Hearing Disorders: A Guide for the Teacher* (3rd ed.), by B. J. Hall, H. J. Oyer, and W. H. Haas, 2001, Boston: Allyn & Bacon; *Speech and Language Difficulties in the Classroom* (2nd ed.), by D. Martin and C. Miller, 2003, London: David Fulton Publishers.

aim to enhance and supplement children's social and linguistic experiences by establishing natural, interactive, communication-based relationships between at-risk children and their environment, including the adults within that environment (Rossetti, 2001).

Early intervention often requires significant involvement by the caregiver, as caregivers must be taught how to respond to children in ways that will ultimately enhance and increase their language behaviors. One of the most successful and widely used models for effectively training caregivers as language facilitators is the Hanen Early Language Parent Program (Girolametto, Greenburg, & Manolson, 1986). The basic notion behind this program is that parents can be their children's language facilitators only if they are taught how. The Hanen approach thus instructs caregivers in becoming better communicative partners to help their children learn to communicate. Parents are taught to identify

Table 5 *Specific Intervention Techniques*

Technique	Explanation
Modeling	Adult models a word or function for the child to imitate after the child demonstrates an interest in an object or activity. A correct imitation of the model is followed by praise, verbal expansion, and immediate access to the desired object/activity.
Mand modeling	Adult uses a prompt (e.g., "Tell me what you want") or a request for response to a direct question (e.g., "What's this?") followed by corrective imitation or reinforcement and access to the desired object or activity.
Conversational recasting	Adult replies to child's utterances by maintaining the child's basic meaning but syntactically changing one or more of the sentence components and incorporating elements that are slightly above the child's current language level (e.g., Child: "Book fall." Adult: "Oh no! Did the book fall off the table?").
Labeling	Adult attends to focus of child's attention and verbalizes the name of the item of focus.
Expansion	Adult repeats child's utterance with the addition of relevant grammatical and semantic details (e.g., Child: "Dog in house." Adult: "Yes! The dog is inside the house.").
Extension and expatiation	Adult responds contingently to the child's utterance by contributing something new and extending some aspect of meaning (e.g., Child: "Dog in house." Adult: "Yes. He went inside. He got too cold.").
Buildups and breakdowns	Adult expands and breaks down the child's utterance to draw attention to its grammatical components (e.g., Child: "I make a mess." Adult: "You did. You made a big mess. A big mess. You sure did make a mess. You made a mess, all right! Didn't you?").

Note. Adapted from material presented in *Language Intervention With Young Children*, by M. E. Fey, 1986, San Diego, CA: College-Hill Press.

children's attempts to communicate and to respond to them contingently using techniques that facilitate interaction and ultimately language growth (see Table 5). Results suggest that children of parents in the Hanen program were more responsive, initiated more conversational topics, used more verbal turns, and displayed a more diverse vocabulary than children in a matched control group. Implementing the teachings of the Hanen program with parents and other adults may be useful in enhancing the communication environment and thus the language abilities of children of all ages, but especially those in the preschool years. Home visitation programs targeting parents of children at risk have also been shown to have a small but significant impact on cognitive and socioemotional outcomes (Sweet & Appelbaum, 2004).

Federally funded community-based programs for low-income families with infants and toddlers, such as Head Start and Early Head Start, also function as effective tools in the prevention of language problems (U.S. Department of Health and Human Services Administration for Children and Families, 2002). Early Head Start programs were found to enhance children's cognitive and language development at both 2 and 3 years of age, leading to improvement in receptive vocabulary and the extent and complexity of children's spoken language. Through proactive, supportive, high-quality interaction, immersion in such early intervention programs is a small step toward equalizing the disparate early language experiences of children from different socioeconomic backgrounds.

Data suggest that, in general, early intervention programs have enduring effects on children's cognitive and social–emotional development into middle school (Nelson, Westhues, & McLeod, 2003). Investment in such programs can be considered an investment in the future, resulting in dramatic savings for both school

districts and society. For example, cost-effectiveness analyses of the Perry Preschool program, an early intervention program for children with low IQs from low-income African American families, demonstrated monetary savings of more than $95,000 per participant by the age of 27 (Barnett, 1996). More specifically, 2 years of enrollment in the Perry Preschool program resulted in school cost savings of $5,500 per participant (Barnett, 1985). Although this program did not specifically target language development, these findings illustrate the remarkable generalized long-term effects of intervention before the age of 3. By implementing early intervention programs, schools can promote the language development of their students in a way that is both effective and cost-efficient.

ALTERNATIVE ACTIONS FOR INTERVENTION

The general premise of the many methods of language intervention is to enhance the natural language development process by augmenting, highlighting, or modifying the linguistic input students receive. It is beyond the scope of this chapter to review the various approaches and techniques used by speech and language pathologists to remediate a language disorder. However, direct intervention from a speech and language pathologist should not be the only service provided to children with or at risk for language disorders. Intervention should include a strong collaborative problem-solving component in which team members, including the students' teacher(s), parents, speech and language pathologists, and school psychologists, work together in planning and delivering interventions for the classroom and home.

Given their familiarity with cognitive and behavioral theory, school psychologists can act as effective partners to the speech and language pathologist in the design and delivery of developmentally appropriate language intervention services (Telzrow, Fuller, Siegel, Lowe, & Lowe, 1989). The school psychologist can assist the speech and language pathologist in the development of appropriate goals for the student's behavior management, social interaction, and developmental play. They can also offer insight and support to speech and language pathologists regarding the psychological and adjustment aspects of the language intervention process. Because of the clear relationship between early language difficulties and future reading problems, school psychologists should ensure that students receive treatment that targets not only spoken language problems but also anticipated problems in reading. Together the school psychologist and the speech and language pathologist can develop a language intervention program that is both effective and appropriate for the individual student.

A critical component of intervention should be collaboration and consultation with the parents of children requiring language intervention. By incorporating parents and the natural home setting into the intervention process, the effects of intervention procedures taking place outside of the home may be maximized. If properly trained, parents can serve as powerful and effective agents of intervention, helping to improve parent–child communication in general, as well as advancing specific intervention goals (Fey, 1986). Parents can be instructed in the communication methods suggested by the Hanen Early Language Parent Program, as well as in joint book reading techniques (see Kirchner, 1991) and specific intervention practices such as modeling, mand modeling, conversational recasting, labeling, expansion and extension, and buildups and breakdowns (see Table 5 for descriptions of these techniques). If parents are equipped with knowledge of how to help children with language problems, language facilitation can occur not only at school, but also at home.

Finally, speech and language pathologists and school psychologists should collaborate with teachers in developing daily classroom lessons that foster language development. The classroom environment offers an ideal setting for intervention aimed at stimulating overall language development in a meaningful and naturalistic context. For those students already displaying language difficulties, classroom-based interventions can present language instruction that is rich, frequent, and relevant to students' daily experiences. By enriching the everyday language environment, classroom-based services can also potentially help children who have not been formally identified as having language impairment (Fey, 1986). Regrettably, children's classroom language experiences often fall short of stimulating. There is a fundamental disparity between *natural* language and *school* language. Unlike natural language that is authentic and relevant, school language is characterized by unnatural, disembodied, teacher-dominated talk that is "directed toward pedagogical ends and not toward communication with children" (Piper, 1998, p. 242).

Nonetheless, school language environments can be modified in ways that will ultimately enhance students' learning experiences. Suggestions derive roughly from a

whole-language perspective or, "a child-centered, literature-based approach to language teaching that immerses students in real communication situations whenever possible" (Froese, 1990, p. 2). In contrast to that in the typical classroom, talk in whole-language classrooms is genuine and natural. Students participate daily in authentic tasks involving authentic language (e.g., predicting daily newspaper headlines based on recent events and writing or discussing the content of the accompanying articles). In this way, both reading and writing are incorporated as a means of learning, yet not at the expense of oral language. Whole-language classrooms also typically integrate subject areas so that language plays a central role across the curriculum. For example, lessons in science, math, language arts, social studies, art, and music all focus on a single, overarching theme, such as rivers or dinosaurs. As a result, genuine and meaningful learning across content areas is connected by a common language (Piper, 1998).

Mercer and Mercer (1998) also provide the following techniques that teachers can use to incorporate language intervention into normal classroom instruction (they also provide activities and specific strategies for increasing language comprehension and production in students with language problems):

1. Teach language in context through authentic and relevant communication.
2. Follow the sequence of normal language development (see Tables 1–3).
3. Vocalize thoughts and describe ongoing actions.
4. Use parallel talk to describe what others are doing.
5. Use modeling to provide practice on a specific language skill.
6. Use expansion to demonstrate how an idea can be expressed in a more complex manner (see Table 5).
7. Use elaboration to show how to provide more information (see Table 5).
8. Use everyday activities to provide skill practice within a context.
9. Recognize the relationship between comprehension and production.
10. Plan and teach the generalization of classroom lessons to natural communication.

Language forms the basis for success in the classroom. As a team, the school psychologist, speech and language pathologists, parents, and teachers can ensure that students receive language intervention that will enable them to be effective learners and communicators.

SUMMARY

School success hinges on language knowledge, as language skills are the single best predictor of later school readiness, reading skills, and mathematics ability. Although language development continues throughout the lifespan, the formative years occur in infancy and preschool when, through interaction with others, children discover the meanings of words (language *content* or *semantics*), the way in which meaning is represented (language *form*, including *phonology*, *morphology*, and *syntax*), and the way in which language is used toward the purpose of communication (language *use* or *pragmatics*).

The ages at which children achieve language milestones vary greatly. Most children easily acquire the complexities of language; yet many children experience difficulty with language form, content, or use. Severe language impairments are typically identified at an early age. However, more subtle language problems often become manifest as the demands of school increase. Language impairment has no single cause. However, research indicates that frequent ear infections, a family history of language and learning problems, and low socioeconomic status are each associated with language impairment.

Language emerges from natural interactions that occur between children and their caregivers, and language input is a crucial factor in determining language ability. Accordingly, methods of prevention and intervention aim to create an optimally stimulating and responsive language environment for all children, particularly those at risk of language impairment. The enrichment and enhancement of children's language experiences, both in the classroom and at home, necessitate the partnership of school psychologists, speech and language pathologists, teachers, and parents. This collaborative commitment to language stimulation may have enduring effects on students' cognitive, social, and linguistic development.

RECOMMENDED RESOURCES

Books and Other Printed Material

Berko-Gleason, J. (2001). *The development of language.* New York: Pearson Education, Inc.

This text thoroughly explores the development of syntax, morphology, semantics, phonology, and pragmatics. It also examines individual differences

in language development and covers atypical development. Written by a panel of experts and including the most recent research findings, this text is a masterful resource on the development of language.

Golinkoff, R. M., & Hirsh-Pasek, K. (1999). *How babies talk: The magic and mystery of language in the first three years of life.* New York: Dutton.

This book provides a light-hearted, yet comprehensive, research-based account of language development during the first 3 years of life. Outlining language milestones, ways to facilitate the language-learning process, and warning signs of potential problems, this book is a valuable resource for school psychologists, teachers, and parents alike.

Paul, R. (2001). *Language disorders from infancy through adolescence: Assessment and intervention.* Philadelphia, PA: Mosby.

Written by a speech and language pathologist, this book provides a clear and extremely comprehensive review of the full spectrum of topics in language disorders, including assessment, intervention, causation, and prevention. Paul also includes specific approaches for assessment and treatment of infants, toddlers, preschoolers, school-age children, and older adolescents with language or learning deficits. This book is an extremely useful resource for anyone involved in the intervention process.

Websites

http://www.asha.org/public/

The public page of the website for the American Speech-Language-Hearing Association offers resources to help all audiences better understand communication and communication disorders. It also provides links to early intervention references and professional referral services for access to qualified care.

http://www.bamford-lahey.org

The Bamford-Lahey Children's Foundation is a foundation dedicated to conducting and supporting programs that will enhance the linguistic, cognitive, social, and emotional development of children. The Foundation's current focus is improving the language development of children with language difficulties. This website provides a thorough list of references on language disorders as well as information relevant to the goal of developing guidelines on evidence-based practices in child language disorders.

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