

# Lecture 8

**Book: Exceptional Children**

**Chapter 8: Communication Disorders**

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## Summary

**Communication:** Communication is the interactive exchange of information, ideas, feelings, needs, and desires. Each communication interaction includes three elements: (a) a message, (b) a sender who expresses the message, and (c) a receiver who responds to the message. In addition to enabling some degree of control in a social environment, communication serves several important functions, particularly between teachers and children such as narrating, explaining, informing, requesting and explaining. Both ‘paralinguistic behavior’s and ‘nonlinguistic cues’ play major roles in human communication. ‘Paralinguistic behaviors’ include speech modifications (e.g. variations in stress, pitch, intonation, rate of delivery, pauses) and non-language sounds (e.g. laughter) that change the form and meaning of the message. ‘Nonlinguistic cues’ include body posture, facial expressions, gestures, eye contact, head and body movement, and physical proximity.

**Language:** A language is a formalized code used by a group of people to communicate with one another. All languages consist of a set of abstract symbols - sounds, letters, numbers, elements of sign language and a system of rules for combining those symbols into larger units. The arbitrariness of language means there is no logical, natural, or required relationship between a set of sounds and the object, concept, or action it represents. The word *whale*, for example, brings to mind a large mammal that lives in the sea; but the sound of the word has no apparent connection with the creature. Whale is merely a symbol we use for this particular animal. A small number of onomatopoeic words such as tinkle, buzz, and hiss sound like what they represent, but most words have no such relationship.

- Five dimensions of language are:
  - i) Phonology - refers to the linguistic rules governing a language’s sound system. Phonological rules describe how sounds are sequenced and combined. A phoneme is a speech sound capable of differentiating meaning. Only the initial phoneme prevents the words pear and bear from being identical, for example; yet in one case we think of a fruit, in the other a large animal.

- ii) The morphology of a language is concerned with the basic units of meaning and how those units are combined into words. Morphemes, the smallest elements of language that carry meaning, can be sounds, syllables, or whole words. Free morphemes can stand alone (e.g., fit, slow ). Bound morphemes do not carry meaning by themselves; they are grammatical markers that change the meaning of words when attached to free morphemes (e.g., unfit, slowly ).
- iii) Syntax is the system of rules governing the meaningful arrangement of words. Syntactical rules are language-specific (e.g. Japanese and English have different rules); and they specify the acceptable (i.e. grammatical) relationships among subject, verb, object, and other sentence elements. The meaning of a sentence cannot be derived from the congregate meanings of the individual words; it is found in the interactive meanings of those words as the result of their grammatical and sequential relationships with one another.
- iv) Semantics concerns the meaning of words and combinations of words. The semantic knowledge of competent language users includes vocabulary and concept development, connotative meanings by context.
- v) Pragmatics govern the social use of language. There are three kinds of pragmatic skills: (a) using language for different purposes (e.g., greeting, informing, demanding, promising, requesting); (b) changing language according to the needs of a listener or situation (e.g., talking differently to a baby than to an adult, giving background information to an unfamiliar listener, speaking differently in a classroom than on a playground); and (c) following rules for conversations and storytelling (e.g., taking turns, staying on topic, rephrasing when misunderstood, how close to stand when someone is talking, how to use facial expressions and eye contact).

Speech: It is the oral production of language. Although speech is not the only vehicle for expressing language (e.g. gestures, manual signing, pictures, and written symbols are also used), it is the fastest, most efficient method of communication by language. Speech is one of the most complex human behaviors. According to Hulit and colleagues (2011) this is what happens when saying the word ‘statistics’, “The tip of the tongue is lifted from a resting position to an area on the roof of the mouth just behind the upper teeth called the alveolar ridge to produce the *s* sound. The tongue is pressed against the alveolar ridge hard enough to produce constriction but not so hard as to stop the airflow altogether. As the speaker slowly contracts the muscles of exhalation under precise control, air is forced between the tip of the tongue and the alveolar ridge. Leaving the tongue in the same area, the speaker now presses a little harder to stop the airflow and then quickly releases the contact for the production of the *t* sound. The tongue drops to a neutral position and the vocal folds in the larynx vibrate to produce the vowel *a*. The speaker turns off the voice and lifts the tongue to the alveolar ridge for the next *t*, then vibrates the vocal folds for the vowel *i* while the tongue stays in a forward but slightly lowered position. The speaker turns voicing off again and moves the tongue to the alveolar ridge yet again to produce the controlled constriction for the next *s*, followed by increased pressure to stop the air flow and release it for the *t*. The voice is turned on one more time and the tongue lowered to a neutral position for the *i*, and then turned off as the tongue arches to the back of the mouth where it contacts the velum, or fleshy part of the roof of the mouth, for the *k*. Finally, the tongue tip darts to the alveolar ridge for the production of the final *s* sound.” Writing is a secondary language form that uses graphic symbols to represent the spoken form.

Overview of typical language development:

### **Birth to 6 months**

- Infant first communicates by crying, which produces a reliable consequence in the form of parental attention.
- Different types of crying develop—a parent can often tell from the baby’s cry whether she is wet, tired, or hungry.
- Comfort sounds (coos, gurgles, and sighs) contain some vowels and consonants.
- Comfort sounds develop into babbling, sounds that in the beginning are apparently made for the enjoyment of feeling and hearing them.
- Vowel sounds, such as /i/ (pronounced “ee”) and /e/ (pronounced “uh”), are produced earlier than consonants, such as /m/, /b/, and /p/.
- Infant does not attach meaning to words she hears from others but may react differently to loud and soft voices.
- Infant turns eyes and head in the direction of a sound.

### **7 to 12 months**

- Babbling becomes differentiated before the end of the first year and contains some of the same phonetic elements as the meaningful speech of 2-year-olds.
- Baby develops inflection; her voice rises and falls.
- She may respond appropriately to “no,” “bye-bye,” or her own name and may perform an action, such as clapping her hands, when told to.
- She will repeat simple sounds and words, such as “mama.”

### **12 to 18 months**

- By 18 months, most children have learned to say several words with appropriate meaning.
- Pronunciation is far from perfect; baby may say “tup” when you point to a cup or “goggie” when she sees a dog.
- She communicates by pointing and perhaps saying a word or two.
- She responds to simple commands such as “Give me the cup” and “Open your mouth.”

### **18 to 24 months**

- Most children go through a stage of echolalia, in which they repeat, or echo, the speech they hear. Echolalia is a normal phase of language development, and most children outgrow it by about the age of 2½.
- There is a great spurt in acquisition and use of speech; baby begins to combine words into short sentences, such as “Daddy bye-bye” and “Want cookie.”
- Receptive vocabulary grows even more rapidly; at 2 years of age she may understand more than 1,000 words.
- Understands such concepts as “soon” and “later” and makes more subtle distinctions between objects such as cats and dogs and knives, forks, and spoons.

### **2 to 3 years**

- The 2-year-old child talks, saying sentences such as “I won’t tell you” and asking questions such as “Where my daddy go?”
- She participates in conversations.
- She identifies colors, uses plurals, and tells simple stories about her experiences.
- She can follow compound commands such as “Pick up the doll and bring it to me.”

- She uses most vowel sounds and some consonant sounds correctly.

### **3 to 4 years**

- The normal 3-year-old has lots to say, speaks rapidly, and asks many questions.
- She may have an expressive vocabulary of 900–1,000 different words, using sentences of three to four words.
- Sentences are longer and more varied: “Cindy’s playing in water”; “Mommy went to work”; “The cat is hungry.”
- She uses speech to request, protest, agree, and make jokes.
- She understands children’s stories; grasps such concepts as funny, bigger, and secret; and can complete simple analogies such as “In the daytime it is light; at night it is . . .”
- She substitutes certain sounds, perhaps saying “baf” for “bath” or “yike” for “like.”
- Many 3-year-olds repeat sounds or words (“b-b-ball,” “1-1-little”). These repetitions and hesitations are normal and do not indicate that the child will develop a habit of stuttering.

### **4 to 5 years**

- The child has a vocabulary of more than 1,500–2,000 words and uses sentences averaging five words in length.
- She begins to modify her speech for the listener; for example, she uses longer and more complex sentences when talking to her mother than when addressing a baby or a doll.
- She can define words such as “hat,” “stove,” and “policeman” and can ask questions such as “How did you do that?” or “Who made this?”
- She uses conjunctions such as “if,” “when,” and “because.”
- She recites poems and sings songs from memory.
- She may still have difficulty with consonant sounds such as /r/, /s/, /z/ and /j/ and with blends such as “tr,” “gl,” “sk,” and “str.”

### **After 5 years**

- Language continues to develop steadily, although less dramatically, after age 5.
- A typical 6-year-old uses most of the complex forms of adult English and has an expressive vocabulary of 2,600 words and a receptive understanding of more than 20,000 words.
- Most children achieve adult speech sound production by age 7.
- Grammar and speech patterns of a child in first grade usually match those of her family, neighborhood, and region.

### **Communication Disorders:**

- **Speech impairments:** A widely used definition considers speech to be impaired “when it deviates so far from the speech of other people that it (a) calls attention to itself, (b) interferes with communication, or (c) provokes distress in the speaker or the listener” (Van Riper & Erickson, 1996). Three basic types of speech impairments are articulation disorders (errors in the production of speech sounds), fluency disorders (difficulties with the flow or rhythm of speech), and voice disorders (problems with the quality or use of one’s voice). Many children have mild to moderate speech impairments. Their speech can usually be understood, but they may mispronounce certain sounds or use immature speech, like that of younger children. These problems often disappear as a child matures. If a mild or moderate articulation problem does not improve over an extended period or if

it has an adverse effect on the child's interaction with others, referral to a speech-language pathologist is indicated (Owens, 2012).

- Language impairments: A language disorder is "impaired comprehension and/or use of spoken, written, and/or other symbol systems. The disorder may involve (a) the form of language (phonology, morphology, and syntax), (b) the content of language (semantics), and/or (c) the function of language in communication (pragmatics) in any combination". Some children have serious difficulties in understanding language or expressing themselves through language. A child with a receptive language disorder may struggle learning the days of the week in proper order or following a sequence of commands such as "Pick up the paint brushes, wash them in the sink, and then put them on a paper towel to dry." A child with an expressive language disorder may have a limited vocabulary for her age, say sounds or words in the wrong order (e.g. "hospital," "aminal," "wipe shield winders"), and use tenses and plurals incorrectly (e.g. "Them threwed a balls").

Characteristic:

Speech-Sound Errors: Four basic kinds of speech-sound errors occur:-

- Distortions- A speech sound is distorted when it sounds more like the intended phoneme than another speech sound but is conspicuously wrong. The /s/ sound, for example, is relatively difficult to produce; children may produce the word "sleep" as "schleep," "zleep," or "thleep." Some speakers have a lisp; others a whistling /s/. Distortions can cause misunderstanding, although parents and teachers often become accustomed to them.
- Substitutions- Children sometimes substitute one sound for another, as in saying "train" for "crane" or "doze" for "those." Children with this problem are often certain they have said the correct word and may resist correction. Substitution of sounds can cause considerable confusion for the listener.
- Omissions- Children may omit certain sounds, as in saying "cool" for "school." They may drop consonants from the ends of words, as in "pos" for "post." Most of us leave out sounds at times, but an extensive omission problem can make speech unintelligible.
- Additions- The addition of extra sounds makes comprehension difficult. For example, a child might say "buhrown" for "brown" or "hamber" for "hammer."

Articulation disorders: An articulation disorder means that a child is at present not able to produce a given sound physically; the sound is not in his repertoire of sounds. A severe articulation disorder is present when a child pronounces many sounds so poorly that his speech is unintelligible most of the time; even the child's parents, teachers, and peers cannot easily understand him. E.g. "Do foop is dood" for "That soup is good."

Phonological disorders: A child is said to have a phonological disorder if she has the ability to produce a given sound and does so correctly in some instances but does not produce the sound correctly at other times. Children with phonological disorders are apt to experience problems in academic areas, and they are especially at risk for difficulties in reading.

Fluency disorders consists of stuttering and cluttering. Stuttering is a condition marked by rapid-fire repetitions of consonant or vowel sounds, especially at the beginnings of words, prolongations, hesitations, interjections, and complete verbal blocks. Developmental stuttering is considered a disorder of childhood. Its onset is usually between the ages of 2 and 4, and rarely after age 12 (Bloodstein & Bernstein Ratner, 2007). Stuttering is far more common among males

than females, and it occurs more frequently among twins. The causes of stuttering remain unknown, although the condition has been studied extensively with some interesting results. A family member of a person who stutters is 3 to 4 times more likely to stutter than the family member of a person who does not stutter. It is not known whether this is the result of a genetic connection or an environment conducive to the development of the disorder, or a combination of hereditary and environmental factors. Furthermore, a type of fluency disorder known as cluttering is characterized by excessive speech rate, repetitions, extra sounds, mispronounced sounds, and poor or absent use of pauses. The clutterer's speech is garbled to the point of unintelligibility. ("Let's go!" may be uttered as "Sko!" and "Did you eat?" collapsed to "Jeet?" (Yairi & Seery, 2011)).

**Voice disorder:** A voice disorder is characterized by the abnormal production and/or absences of vocal quality, pitch, loudness, resonance, and/or duration, which is inappropriate for an individual's age and/or sex. A voice is considered normal when its pitch, loudness, and quality are adequate for communication and it suits a particular person. Voice disorders are more common in adults than in children. Considering how often some children shout and yell without any apparent harm to their voices, it is evident that the vocal cords can withstand heavy use. The two basic types of voice disorders involve phonation and resonance. A phonation disorder causes the voice to sound breathy, hoarse, husky, or strained most of the time. In severe cases, there is no voice at all. Phonation disorders can have organic causes, such as growths or irritations on the vocal cords; but hoarseness most frequently comes from chronic vocal abuse, such as yelling, imitating noises, or habitually talking while under tension. A voice with a resonance disorder is characterized by either too many sounds coming out through the air passages of the nose (hyponasality) or, conversely, not enough resonance of the nasal passages ( hypernasality ).

**Language Disorders:** Language disorders involve problems in one or more of the five dimensions of language: phonology, morphology, syntax, semantics, and/or pragmatics. Language disorders are usually classified as either receptive or expressive. A receptive language disorder interferes with the understanding of language. A child may, for example, be unable to comprehend spoken sentences or follow a sequence of directions. An expressive language disorder interferes with the production of language. The child may have a very limited vocabulary, may use incorrect words and phrases, or may not speak at all, communicating only through gestures. A child may have good receptive language when an expressive disorder is present or may have both expressive and receptive disorders in combination. Educators sometimes use the term 'language learning disability' (LLD) to refer to children with significant receptive and/or expressive language disorders.

**Cause of speech impairments and language disorders:** Examples of physical factors that frequently result in speech impairments are cleft palate, paralysis of the speech muscles, absence of teeth, craniofacial abnormalities, enlarged adenoids, and traumatic brain injury. Dysarthria refers to a group of speech disorders caused by neuromuscular impairments in respiration, phonation, resonance, and articulation. Factors that can contribute to language disorders in children include developmental and intellectual disabilities, autism, traumatic brain injury, child abuse and neglect, hearing loss, and structural abnormalities of the speech mechanism. Research indicates that genetics may contribute to communication disorders (McNeilly, 2011). Scientists in Britain have discovered a gene area that affects speech (Porterfield, 1998), and other

researchers have reported genetic links to phonological disorders (Uffen, 1997) and stuttering (Yairi, 1998).

#### Educational Approaches:

- Speech-language pathologist (SLP) is the preferred term for the school-based professional with primary responsibility for identifying, evaluating, and providing therapeutic services to children with communication disorders. As a key member of a child's IEP team, the SLP's goal is to correct the child's speech and/or language problems or to help the child achieve the maximum communicative potential, which may involve compensatory techniques and/or augmentative and alternative means of communication.
  
- Treating Speech-Sound Errors:
  - i) Articulation errors: The goals of therapy for articulation problems are acquisition of correct speech sounds, generalization of the sounds to all speaking settings and contexts (especially the classroom), and maintenance of the correct sounds after therapy has ended. Traditional articulation therapy involves discrimination and production activities. Discrimination activities are designed to improve the child's ability to listen carefully and detect the differences between similar sounds (e.g. the /t/ in tape, the /k/ in cape ) and to differentiate between correct and distorted speech sounds. Production is the ability to produce a given speech sound alone and in various contexts. Therapy emphasizes the repetitive production of sounds in various contexts, with special attention to the motor skills involved in articulation. Exercises are employed to produce sounds with differing stress patterns.
  - ii) Phonological errors: When a child's spoken language problem includes one or more phonological errors, the goal of therapy is to help the child identify the error patterns and gradually produce more linguistically appropriate sound patterns. Many children with communication disorders have problems with both phonology and articulation. The therapeutic approaches for articulation and phonological disorders are not incompatible and can be used together for some children.
  
- Treating fluency disorders: There is no single treatment for stuttering because the causation, type, and severity of non-fluencies vary from child to child. Despite this variability, teachers can significantly help a child who stutters by providing a good speech model, paying attention to what the child is saying rather than to his difficulties in saying it, and reinforcing fluent speech (LaBlance, Steckol, & Smith, 1994). When the child experiences a verbal block, the teacher should be patient and calm, refrain from telling the child to "slow down" or "take a deep breath," and maintain eye contact with the child until he finishes speaking. Children often learn to control their stuttering and produce increasingly fluent speech as they mature (Ramig & Pollard, 2011). Stuttering frequently decreases when children enter adolescence, regardless of which treatment method was used. Often, the problem disappears with no treatment at all. Nevertheless, an SLP should be contacted when a child exhibits signs of stuttering or when the parents are concerned about speech fluency.

- Treating voice disorders: Other than medical interventions and environmental modifications (such as using a microphone to reduce strain on the voice), most remedial techniques offer direct vocal rehabilitation, which helps the child with a voice disorder gradually learn to produce more acceptable and efficient speech. Voice therapy often begins with teaching the child to listen to his own voice and learn to identify those aspects that need to be changed. Depending on the type of voice disorder and the child's overall circumstances, vocal rehabilitation may include activities such as exercises to increase breathing capacity, relaxation techniques to reduce tension, vocal hygiene (e.g., drink fluids, avoid excessive throat clearing, vocal rest), and procedures to increase or decrease the loudness of speech.
  
- Treating language disorders includes –
  - i) Vocabulary building: Foil and Alber (2003) recommend that teachers use the following sequence to help students learn new vocabulary:
    - Display each new word, pronounce it, give the meaning of the word, and have students repeat it.
    - Provide and have students repeat multiple examples of the word used in context.
    - Connect the word and its meaning to students' current knowledge, and prompt students to describe their experiences related to the word.
    - Provide multiple opportunities for students to use the word in context during guided practice, and provide feedback on their responses.
    - Help students discriminate between words with similar meanings but subtle differences (e.g., 'separate' and 'segregate').
    - Assign independent practice activities; challenge students to select new vocabulary words to learn independently.
    - Promote generalization and maintenance by prompting students to use their new vocabulary, providing praise and other forms of reinforcement when students' speech and writing contain new vocabulary, and having students self-record how often they use new vocabulary.
  - ii) Naturalistic strategies: Naturalistic interventions, often called milieu or incidental teaching, take advantage of naturally occurring activities throughout the day to provide motivation and opportunities for a child to use language skills. Kaiser and Grim (2006) make the following recommendations about naturalistic interventions:
    - Teach when the child is interested.
    - Teach what is functional for the student at the moment.
    - Stop while both the student and the teacher are still enjoying the interaction.
  
- Augmentative and alternative communication: refers to a diverse set of strategies and methods to assist individuals who cannot meet their communication needs through speech or writing. AAC entails three components:
  - A representational symbol set or vocabulary: After selecting the vocabulary for an AAC system, the educator must choose or develop a collection of symbols to represent the vocabulary. Symbol sets are graphic, which means that the symbols look like the object or concept they represent as much as possible. These sets are a



- collection of pictures or drawings in which each symbol has one or more specified meanings, from which a person's AAC vocabulary might be constructed. Using software programs such as Mayer-Johnson's Boardmaker, teachers can create individualized sets of communication symbols. Symbol sets may also be homemade, consisting of photos, pictures, and perhaps words and the alphabet.
- A means for selecting the symbols: Direct selection involves pointing to the symbol one wishes to express with a finger or fist or sometimes with a wand attached to the head or chin. With a limited number of selections widely spaced from one another, the user can select symbols by "eye pointing." Scanning techniques present choices to the user one at a time, and the user makes a response at the proper time to indicate which item or group of selections she wants to communicate. Scanning can be machine or listener assisted (e.g., the listener may point to symbols one at a time while watching for the user's eye blink, which signals selection). Encoding involves giving multiple signals to indicate the location of the symbol or the item to be selected.
  - A means for transmitting the symbols: After meaningful vocabulary and an appropriate symbol set have been determined, a method of transmitting the symbols must be considered. Software developers have created numerous AAC apps for smart phones, such as the iPhone and Android, and for portable tablets, such as the iPad. Dedicated communication aids—such as the Dynavok Maestro and Prentke Romich Intro Talker—offer computerized speech selection and transmission and large vocabulary that can be individualized for the user. In spite of the high-tech "arms race" among developers and providers of computer-based AAC systems, one of the most common and effective AAC tools is the communication board, a flat area (often a tray or a table attached to a wheelchair) on which the symbols are arranged for the user to select. A student may have a basic communication board of common words, phrases, numbers, and so forth, for use across many situations.

#### Educational placement alternatives:

Most of the students with language disabilities are placed in general education classrooms, followed by resource rooms and lastly, few are placed in separate classes in the US. The service delivery models in these three educational settings are as follows:

- ❖ **Monitoring:** The SLP monitors or checks on the student's speech and language performance in the general education classroom. This option is often used just before a student is dismissed from therapy.
- ❖ **Pull-Out:** The traditional and still most prevalent model of service delivery is the pull-out approach, sometimes called intermittent direct service. SLPs spend two-thirds of their time working with a child individually or with small groups of up to three children. Pull-out may involve sessions of up to 1 hour 5 days per week. Because communication is seen as occurring most meaningfully in the natural environment, remedial procedures are increasingly carried out in the general education classroom during ongoing routines rather than in a special speech room. Many SLPs believe it is impossible to adequately serve a child with speech or language impairments with an isolated, pull-out approach.
- ❖ **Collaborative Consultation:** SLPs who work in school settings more often function as team members concerned with children's overall education and development. The SLP often provides training and consultation for the general education classroom teacher, who may do

much of the direct work with a child with communication disorders. The specialist concentrates on assessing communication disorders, evaluating progress, and providing materials and techniques. Teachers and parents are encouraged to follow the specialist's guidelines.

- ❖ **Classroom or Curriculum Based:** Increasingly, SLPs are working as educational partners in the classroom, mediating between students' communication needs and the communication demands of the academic curriculum. SLPs report devoting about one-fourth of time in helping teachers integrate language and speech goals into daily curriculum activities. The advantage is that services are brought to the child and the teacher, and communication connections with the curriculum are made more directly. Training classroom teachers and parents to promote children's speech and language development has become an increasingly important aspect of the SLP's responsibilities.
- ❖ **Separate Classroom:** Students with the most severe communication disorders are served in special classrooms for children with speech or language impairments.
- ❖ **Community Based:** In community-based models, speech and language therapy is provided outside the school, usually in the home. This model is most often used with preschoolers and sometimes for students with severe disabilities, with an emphasis on teaching functional communication skills in the community.
- ❖ **Combination:** Variations of all these models exist, and many schools and SLPs serve children using combinations of two or more models.