



Communication and Language

Silvia L. DeRuvo, MA

CSUS, Fall 2009

EDS 130



Agenda

- ◆ Definitional Issues
- ◆ Domains of Speech and Language
- ◆ Language Development
- ◆ Factors Affecting Communication
- ◆ Speech Disorders
- ◆ Language Disorders
- ◆ Intervention



Communication and Language

- ◆ Language development often is used as a gauge of general development
- ◆ Many developmental disabilities result in some impairment of language or speech skills
- ◆ Language and speech allow people to communicate through the medium of sound
 - Speech: sounds that we use to transmit ideas from one person to another
 - Language: the code that gives meaning to the sounds
 - Some codes are visual rather than acoustic
- ◆ Communication can occur without speech, but would be limited without language



Definitional Issues

- ◆ Communication-
 - an exchange of information or ideas
- ◆ Speech
 - Auditory articulation code by which we represent spoken language
- ◆ Language
 - “code whereby ideas about the world are represented through a conventional system of arbitrary signals for communication.”



Definitional Issues

- ◆ Phonology
 - The study of speech sounds
- ◆ Morphology
 - The study of the smallest meaningful unit of language: -ed, -s, un-
- ◆ Syntax
 - Aspect of language pertaining to the organizational rules of sentences
 - Syntax and morphology combine to form grammar



Definitional Issues

◆ Semantics

- The study of meaning and content – what one is talking about

◆ Pragmatics

- Refers to the social context around which we learn and use language
 - The speech act including: discourse and turn taking



◆ The Domain of Language

- Components of language are phonology, grammar, semantic and pragmatics
 - Phonology and grammar give language its form
 - Phonology is the set of sounds and the rules for using the sounds
 - Grammar specifies how the different words and parts of words are arranged
 - Semantics tell us what different words mean
 - Pragmatics describes how language should be adapted to specific social situations, to convey emotion, and to emphasize meaning
 - Discourse, narrative skills, and prosody are included in this domain



◆ The Domain of Speech

- Characterized by articulation, resonance, voice and fluency/rhythm
 - Articulation is the production of consonant and vowel sound by the lips, tongue, and teeth
 - Resonance refers to the balance of air flow between the nose and the mouth
 - Disorders of resonance are hypernasal and hyponasal sounds
 - Voice refers to the vibrations of the vocal folds in the larynx
 - Fluency entails a certain rhythm or rate
 - Disorders known as stuttering disrupt rate and rhythm

Language Development



- ◆ Most complex skill that people acquire
- ◆ Children from all cultures appear to follow the same general course of language development
- ◆ Before birth, children learn the sounds of their own language



Language Development

◆ Pre-linguistic Babbling

- non-verbal means of communication- gazing, smiling, crying, grunting, pointing, showing
- Includes jargon stage- stress and sounds of adult speech
- Overlaps to one-word and combined word stages

◆ One-Word Stage

- Holophrases: one word represents whole phrase
- Overextensions: use a familiar word to identify a new object



Language Development

- ◆ Early Word Combinations
 - Combining words with pointing and gesturing
- ◆ Multi-Word Combinations
 - Overgeneralization of grammar
- ◆ Simple Sentence Structure
 - Basic transitive sentences: He cried



Language Development

◆ First year

- Social language such as gazing, smiling, crying and laughing followed by cooing at 2 or 3 months
- Vowel sounds mixed with consonant babble at 6 months
- First words are consonant vowel combinations
- Echolalic babbling which has the intonation of other speakers in the environment
- Jargon babbling which are strings of utterances with speech patterns of adult speech with no recognizable words

Language Development



- ◆ Recognizable words are uttered around the first birthday
 - Called holophrases because the one word may have several different meanings in different situations
 - Children also label objects using these holophrases
 - Telegraphic language develops next
 - Like a telegraph message with many of the “non-essential” words removed
 - Overgeneralization occurs during the overlapping stages of telegraphic speech and adult grammar
 - Child over-generalizes grammatical rules he has learned



Language Development

- ◆ Development of all semantic categories, verbs and auxiliaries lead to basic sentence patterns.
- ◆ This occurs by the age of 4!
 - Only 2 to 2 ½ years for a child to completely develop the spectrum of language skills!



Factors Affecting Communication Development

◆ Hearing loss

- Minor temporary losses can be disruptive
- types of loss: conductive or sensorineural

◆ Vision

- Significant development of language is joint attending- seeing and object and getting a label from caregiver
- Unaware that their caregivers can see- no non-verbal communication
- Delays language development

◆ Intelligence

- Complex relationship between language and cognition



Factors Affecting Communication Development

◆ Memory

- Significant role in the acquisition of language
- Formulate and hold visual imagery in memory while getting the label for the image
- Categorization important in helping hold the image in memory in order to get label

◆ Attention

- Have to inhibit competing messages
- Learning has to be meaningful and worthwhile to hold attention and block out other stimuli

◆ Cultural and Linguistic Diversity

- Often difficult to determine if a true language disorder or an English learner issue



The Biological Basis of Language: Ears to Brain to Lips

- ◆ There is a network of neurons distributed widely across different brain regions devoted to the processing of language
- ◆ Ears and Auditory pathways: Antenna and Tuner
 - Speech sounds are complex
 - Human speech features multiple sounds that occur simultaneously across many frequencies with rapid transitions from one frequency to another
 - The ear take this complex signal deciphers it and translates it into electrical impulses
 - Sent by nerves to the auditory areas of the cerebral cortex in the temporal lobe
 - Processed further to the language areas of the cortex



The Biological Basis of Language: Ears to Brain to Lips

- ◆ Brain: A Neural Network for Understanding
 - Wenicke's area in the primary auditory cortex processes the acoustic signal
 - For each different signal, a distinct set of neurons become activated
 - The distinct neurons activate other neurons that store a visual picture (in the inferior temporal lobe) and other neurons store the concept about the sound (in the parietal lobe)
 - This is a person's knowledge: auditory, visual, and conceptual are stored in the neural network that encompasses the brain regions, not in a single central processing unit.
 - To verbalize a thought the reverse process occurs
 - First activate an internal representation of the object, the thought is channeled to the speech center of the brain, Broca's area where thoughts are turned into patterns of neuron activation that are needed to produce speech
- ◆ Lips and More: Speech Output Devices
 - Lips must be coordinated with the tongue, palate, jaw, larynx and the diaphragm



◆ Other Biological Considerations

- Strokes in Broca's area cause impairment in language output
- Strokes in Wernicke's area cause difficulty in language comprehension
- Left hemisphere is dominant for language in 90% of population
- The right hemisphere does deal with language pragmatics
- Also involved are the areas of the brain involved in memory since memory function is essential for remembering the thread of a story
- It is possible that some part of the brain are used only during the period of language development, but not later!

Speech Disorders and Their Causes

- ◆ Affect the ability to *produce speech* but not the ability to express or understand language
- ◆ May occur as isolated speech problems or together with language and other developmental disabilities
- ◆ Articulation
 - Most common disorder
 - Toddlers go through a progression of articulation skills
 - Those that do have impaired articulation have no known cause, other than possible hearing impairment
 - Tongue-tied (short frenulum) can also cause some articulation disorders
- ◆ Resonance
 - Occur when the soft or hard palate is dysfunctional
 - Due to cleft palate causing problems with airflow between the mouth and nose
 - Some without obvious cleft, still have palatal dysfunction causing hypernasality
 - Submucous clefts also cause hypernasality
 - Hyponasal speech is usually caused by nasal obstruction like chronic allergies, septal deviation, and enlarged adenoids





Speech Disorders and Their Causes

◆ Voice

- Voice disorders are abnormalities in pitch, loudness, softness and hoarseness usually result from injury to the laryngeal folds
 - Possible causes are viral infection, polyps and abusive vocal patterns.
 - Neurological injuries can cause paralysis affecting voice

◆ Fluency

- Stuttering is the general term for dysfluency or dysrhythmia of speech
 - Can take the form of unusual hesitations, repetitions of words or syllables, and the interjection of non-speech sounds
 - No underlying anatomical or physiological defect has been identified
 - Has devastating psychological consequences

◆ Dysarthria and Dyspraxia

- Impairment of the oral motor structure and control of the muscles either in isolation or as part of a general condition like cerebral palsy
 - Articulation most often affected
 - Voluntary control of the muscles are impaired

Speech Disorders and Their Causes

◆ Cleft Palate

- Most common congenital malformation affecting the jaw region
- Occurs when the palatal shelves fail to fuse during the sixth to eighth week of fetal development
 - The resultant opening is the cleft
 - Occurs alone or with other syndrome disorders
- Articulation and hypernasal speech are the most common language disorders
 - Difficulty feeding is an additional concern
- Numerous surgeries beginning at 2-3 months to correct cleft and repair palate that continue through early adulthood
- Middle ear dysfunction is also common





Language Disorders and their Causes

- ◆ Childhood language disorders are classified according to
 - Whether the disorder is specific to language or is part of a more general cognitive disorder
 - Whether comprehension, expression or both are affected
- ◆ General Impairments Cause Language Impairment
 - Mental retardation or global developmental delays always have language delays
 - Language development depends on certain underlying cognitive skills and cannot advance beyond the level of those skills
- ◆ Expressive versus Receptive Language Disorders
 - Language skills that are significantly lower than cognitive abilities have specific language impairment SLI
 - Difficulties are primarily in the expression of thoughts and ideas-*Expressive disorder*
 - Difficulties understanding language-mixed *Receptive-Expressive disorder*
 - Rare for a child to only have a receptive language disorder
 - Severity and particular language function affected differs with each child



Causes of Language Disorders

- ◆ Divided into disorders that are acquired and those that are congenital
 - Acquired
 - Common cause is TBI
 - Infrequent cause is Landau-Kleffner syndrome where skills deteriorate after initial typical development
 - Otitis media is an unlikely cause of significant language delays
 - Congenital
 - Significant hearing impairments
 - Impaired phonological processing- temporal processing deficit
 - Often have related reading difficulties
 - Identified differences in brains of those with SLI
 - Abnormal patterns in the left-right symmetry in language areas of the brain and the presence of cortical neurons in the wrong place
 - Genetic contribution is strongly supported by studies



Communication Development in Children with Special Needs

◆ Intellectual Disabilities

- Both receptive and expressive skills are affected
- Learn all morphological components of language but at a slower rate

◆ Learning Disabilities

- Experience word retrieval problems
- Poor memory interferes with communicative interactions



Language Disorders

- ◆ Specific Language Impairment
 - Language delay not due to: hearing loss, mental retardation, autism, emotional conflict, learning disability, physical disability and lack of English on home environment
 - Problem of comprehension of language (receptive) and or expressive language with other development being intact
- ◆ Hearing Loss
 - More significant in deaf children of hearing parents
 - Not significantly affected in families that are Deaf
 - Shows positive benefits to language development when sign language is used



Language Disorders

- ◆ Vision Loss
 - Absence of early gestural language
 - Lack of mobility- lack of experience in the environment
 - Limits concept formation
- ◆ Cerebral Palsy
 - Restricted by neuromuscular involvement
- ◆ Autism Spectrum Disorder
 - Severe deficits in joint attention initiation
 - Inability to focus on the same thing as the communicating partner

The Speech and Language Therapist

- ◆ Early identification and treatment increases the likelihood that the disabling condition will be minimized
- ◆ Must be alert about parental concerns about language development
- ◆ Monitor those who are at risk like premature, hearing impaired, developmentally delayed
- ◆ Children who are not producing 20 words by the age 2 should be considered for assessment
- ◆ Speech-Language Assessment
 - Initial determination comes from parent reports of concerns and direct observation of child
 - Systematic and norm referenced methods for analyzing spontaneous speech
 - Therapists use a combination of measure to check many parameters of communicative competency
 - Preschool Language Scale
 - Clinical Evaluation of Language Fundamentals
 - Include measure of the ability to
 - Understand and use various grammatical forms
 - Follow spoken directions
 - May also undergo evaluations of articulation, concept acquisition and pragmatic skills





Principles of Intervention

- ◆ Use comprehensive assessment results
- ◆ Develop activities that focus on interaction within the social context
- ◆ Make activities purposeful
- ◆ Use natural settings
- ◆ Allow for variability of development
- ◆ Take advantage of spontaneous opportunities
- ◆ Develop new information with in the context of old information
- ◆ Teach vocabulary in depth
- ◆ Make language experience fun
- ◆ Be aware of developmentally appropriate intervention

Alternative Modes of Communication



- ◆ Assistive technology
 - Refers to any of a variety of technologies that assist individuals with disabilities
- ◆ Augmentative and Alternate Communicate AAC
 - Are AT tools that assist children specifically with communicating
 - Children who are unable to communicate through the auditory verbal channel should be provided with an AAC
 - Selection of an AAC must take into account cognitive, sensory and motor abilities as well as anticipated communicative partners



Augmentative and Alternate Communication

- ◆ Four types are commonly used
 - Sign language
 - a method of communication with hand gestures. ASL has its own grammar and sentence structure. Must have parent who will learn to sign. Lowers frustration level of child
 - Low-tech communication boards
 - May include miniature objects, photographs, and Bliss symbols
 - High-tech computer systems
 - May include keyboard, touch panel, with input, and voice or visual output
 - Picture Exchange communication System (PECS)
 - Requires a child to give a picture of a desired item to a partner in exchange for a desired item or activity
 - Used frequently with children with ASD

Prognosis

- ◆ The underlying etiology of the communication impairment is the single most important factor in determining the prognosis of the child's language in later life
- ◆ Children with communication disorder and general cognitive impairment will improve with therapy but not pass cognitive levels
- ◆ Articulation errors can be resolved in early years
- ◆ Specific language impairment has a variable prognosis
- ◆ Substantial improvement can occur, but subtle impairments remain
- ◆ Collaboration is necessary in order to provide effective intervention

