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Children Referred for Speech Delays

Evaluation, assessment and intervention guidance for service providers and families of young children whose delays in communication are a primary concern.

October 2014

Connecticut
Birth to Three
System

Acknowledgments

The Birth to Three System would like to thank the following original members of the Speech Referrals Task Force. Only because of their commitment to these issues as well as their donation of time and significant effort was this guideline possible.

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PREFACE

Remarkably, of the referrals made to Connecticut's Birth to Three System over half are identified as having communication as the *only* area of concern. This prompted the Connecticut Birth to Three System to establish a task force to develop the following guideline. The guideline continues to be updated periodically.

The tasks were to recommend strategies and supports both for those children with communication delays that are significant enough to make them eligible for Birth to Three and those who are not eligible (often described as late talkers or late bloomers.) As the task force began its work, it became clear that the participants had different understandings of the mission of Birth to Three in Connecticut. Developed by a wide variety of key stakeholders in the Spring of 1996, the mission of the Connecticut Birth to Three System is to *strengthen the capacity of Connecticut's families* to meet the developmental and health-related needs of their infants and toddlers who have delays or disabilities (Appendix 1).

To do this, the system supports comprehensive Birth to Three programs that provide the services and supports identified in Part C of the Federal Individuals with Disabilities Education Act (IDEA). Families may choose the program that best meets their needs. It is through a variety of means, including guidelines such as these, that the system can assure that the quality of the support offered is consistent among programs.

It is often confusing to refer to children as having speech delays. Communication includes facial expressions, gestures and signs as well as spoken words where "speech" refers to spoken communication. Children may be delayed in speech without having a delay in communication or they may have communication delays and no actual speech concerns. These guidelines use the term "language" to refer to the system of symbols (words) that is used to communicate.

One of the goals of this guideline include addresses concerns about children for whom expressive language is their only delay. When is there enough of a delay or disorder to warrant eligibility for a formal external support like the Birth to Three System? When are monitoring and suggestions for activities at home enough? What type of safety net is in place for those not eligible in case they don't make progress?

Many of the components of these guidelines are written by speech-language pathologists for speech-language pathologists but they are also intended to be useful to the entire team, including parents. The primary section focuses on expressive language delays and the factors that influence why a child may have age appropriate receptive skills and expressive skills that are impaired. Otitis media, disorders of phonology, oral motor disorders, childhood apraxia of speech, speech sound disorders, and disorders of fluency are also discussed as factors that may determine a child's eligibility for Connecticut's Birth to Three System.

The guideline offers suggestions for differential diagnosis and eligibility determination. Appendix 3 was developed to help individuals who work with young children and their

families to consider the many facets of a comprehensive language assessment. The Connecticut Birth to Three System encourages use of a transdisciplinary model in which one primary person develops a relationship with the family and child while others consult as needed. In support of that, the primary interventionist with whom a parent has a good working relationship may not always be a speech-language pathologist. It is expected however, that a speech-language pathologist will be included in the IFSP team when the only area of concern is language.

Although the cognitive-behavioural outcomes of "late talkers" have been previously explored, the associated neurobiological characteristics of children who are early or late talkers, such as the neural circuitry for speech and print processing, are not well characterized (Preston et al., 2010). Preston et al., (2010) reported functional magnetic resonance imaging data from a subset of 'early', 'on-time", and 'late talkers'. Findings suggest the age of functional language acquisition can have long reaching effects on reading and language behavior, and on the corresponding neurocircuitry that supports linguistic function into the school-age years. Nationwide, our understanding of the purpose of Part C of IDEA is continually being refined. Since these issues are being researched and explored worldwide, this guideline is a starting point for continued discussion about preferred practices for working with families who have infants and toddlers with communication delays and disorders.

*** Words that are bold and italicized are listed in the glossary in Appendix 12 & 13. Note that "dis" and "dys" mean the same thing**

EXPRESSIVE LANGUAGE DELAYS

When early intervention providers see children from 18 to 36 months of age, one of the most common parental concerns is that the child does not talk. Some parents say their children "understand everything" but just can't speak. Many believe that if we could just "teach them to talk", the kids would be fine. Correctly differentiating between children who are late to begin talking but will eventually speak without intervention from children who will have chronic language/learning problems, or will function on the autism spectrum, is a very difficult call to make. Generally, the best we can do is to determine the level of risk for any of these conditions that a child is currently showing, attempt to treat the present symptoms, and carefully monitor development. Usually the picture will be clearer by the time the child reaches the third birthday, but until then it is very hard to be certain.

The term "**Specific Expressive Language Delay**" (SELD) is used when a child's **expressive language** skills are significantly delayed in relation to his/her **receptive language** skills and there are no other apparent developmental problems. That is, nonverbal cognitive skills, motor skills, and social-emotional development are within normal limits; there is no history of hearing impairment, intellectual disability, autism spectrum disorder or other significant developmental disabilities. SELD is usually defined as limited expressive vocabulary (less than 50 words) by 24 months of age (Paul, 1996).

The following characteristics of children with SELD have been identified in the literature:

- ♦ The majority are male
- ♦ Although there are mixed findings in the literature, many studies have found a higher incidence of language delay in families in which there is a history of language impairment or reading/learning problems
- ♦ Some oral motor and early feeding problems were found in some children with SELD
- ♦ Family size is large
- ♦ Parental interactions with children with SELD may be different than with children who develop expressive language without delays
- ♦ Higher rates of challenging behaviors have been noted
- ♦ Children use nonverbal communication more frequently

Three longitudinal studies have followed such children (expressive language delay between 24-36 months) in the United States (Fischel et al., 1989; Rescorla & Schwartz, 1990; Paul, 1996). The results were similar among the studies. However, it is important to note that the subjects in these studies were from middle class families with *NO* other risk factors (e.g., normal birth history, no family dysfunction). These findings *cannot* be indiscriminately applied to other children.

Some of the subjects in these studies had therapy during the course of the study. Those parents that did not choose intervention were given suggestions for home activities to improve their child's language development and early literacy. Additionally, assessment is, in and of itself, a form of intervention. It is possible that by virtue of being in the study, the parents changed the way they interacted with or perceived their children. So, in a sense, we do not really know what would have happened to these children without any intervention.

The following is a summary of the results from the three longitudinal studies:

◊ As children get older, they tend to move into the "normal" range. By Kindergarten age, most of the children (approximately 74%) performed in the low end of normal range on standardized language tests.
◊ Expressive vocabulary seems to be the first aspect of language to improve (by 5 1/2 years of age, almost all of the subjects' vocabularies had moved into the normal range).
◊ *Syntactic* problems in subjects gradually declined, again a majority of the children moving into the normal range by age 5.
◊ *Phonologic* problems persisted in about 22% of the children with SELD by age 5.
◊ Children with a history of SELD continued to score significantly lower on narrative tasks into first grade.
◊ Children with a history of SELD, although scoring in the low normal range on tests of early reading, showed a statistically significant gap between reading and math scores, suggesting some residual effects.

Dale and al. (2003) reported that only 44% of the 740 late talkers identified at age 2 yrs still manifested expressive vocabulary delays at age 3 yrs and that only 59% of the 835 children with an expressive vocabulary delay at age 3 yrs had been delayed at age 2 yrs. These findings indicate low continuity of early expressive vocabulary delay and suggests only a small group of youngsters display persistent expressive delays in early childhood. Henrichs, J. et al. (2013) also tested whether gender moderated the associations between vocabulary delay and behavioral/emotional problems. This study showed modest associations of early vocabulary delay with elevated levels of parent-reported behavioral/emotional problems in early childhood, particularly for boys.

Identification

Eligibility evaluations are usually completed using a *multi-domain standardized instrument* assessing five developmental areas: *cognition, motor*, **communication, social/emotional** and *adaptive* skills. Along with parent interview or questionnaire, these instruments can provide basic, defining information about a child's current developmental status. Multi-domain standardized instruments which are *norm-referenced* include the *Battelle Developmental Inventory*, the *Alberta Infant Motor Scale*, the *Bayley Scales of Infant Development, the Developmental Assessment of Young Children, and the Vineland Adaptive Behavior Scales*. When a child is determined to be delayed with one of these tools, the underlying issues that are causing or influencing the delay may not be apparent. Some children may be delayed in all areas to approximately equal levels, and some children may have specific delays in one or two areas.

In the area of communication development, many factors may underlie a delay as measured by the instruments listed above. These tests may suggest a delay in comparison to typical development, when in fact, the issues underlying the delay may be the basis for a more involved and possibly long-term disorder such as autism spectrum disorder or childhood apraxia of speech. Thus for children with delays in the communication domain, other assessment measures are important in determining the nature and basis for the delay.

These tests need not be norm-referenced, but may be *criterion-referenced* or performance assessments. They may be standardized or non-standardized test instruments, profiles and inventories of the child's development, formal and informal observations with analysis of these observations, as well as parent report and case history. Specific indicators obtained via

parental report and reason for referral will assist the evaluator in selecting the most appropriate measures to use as part of the eligibility evaluation.

The four sections that follow explore in greater detail some of the possible underlying issues and how to distinguish if indeed these are influencing the child's ability to make her needs known by speaking.

Other possible underlying issues in expressive language delay

Otitis Media is defined as inflammation of the middle ear, usually with fluid, which may or may not be infected. The condition is very common in young children and is the reason for many visits to the pediatrician. A condition possibly associated with otitis media is fluctuating hearing loss. The effect of otitis media and fluctuating hearing loss on the development of speech and language skills is important to early interventionists.

A child with chronic otitis media as documented by a physician (duration of six months or longer) is eligible for Birth to Three services if he or she has a delay of -2 Standard Deviation (SD) below the mean or greater in expressive language only. For children with episodes of ear infections, which are less frequent or shorter than six months, eligibility is determined by the standard processes. The research in relation to the effect of otitis media on the development of speech and language skills is, at best, confounding. Although it may be a factor in the delay of skills, the presence of otitis media with a language delay suggests that once the otitis media is successfully treated, there may be improvement in speech and language skills.

Children who have a delay in communication with <u>no</u> history of otitis media may, in fact, be at greater risk for continued poor performance.

It is the responsibility of the Birth to Three team to explore the potential of hearing loss as a factor in children with delays in communication development. The nature and importance of an audiological evaluation (formal hearing test) should be discussed with the child's family and physician. Infoline will be suggesting that children referred due to concerns about their communication skills have their hearing tested.

All newborns in Connecticut have their hearing screened at birth, but it is also quite possible for children to develop what is called "late-onset" hearing loss due to otitis media, other diseases, or medications. Therefore, a child who is delayed in speech development needs to have acquired hearing loss ruled out as a cause of the speech delay.

If the audiological exam is not completed before the child's eligibility evaluation, the Birth to Three evaluators can help the family prepare the child for the hearing test. These suggestions for preparation can include the importance of being well rested, selecting a time of day when the child is most alert and interactive, and practicing play audiometry techniques with older children. The evaluators can also be of service to the family by answering questions or explaining the nature and resolution of otitis media in children.

> ◊ **All children with delays in their development of communication skills must receive an audiological evaluation. It is essential to make every attempt to rule out hearing losses: unilateral, bilateral, and frequency specific. As a payer of last resort, it is the responsibility of Birth to Three to assure that an audiological evaluation is completed on all children who are eligible and have a communication delay.**

Phonology is the study of the system or pattern of speech sounds used in a particular language, whereas phonetics is the study of the speech sounds (phonemes) in a language. Phonological processes are the systematic and rule-governed speech patterns that characterize a child's speech, including syllable structure changes, assimilation (changing one sound in a syllable for another sound in the same syllable e.g., dod/dog), place of articulation changes, and manner of articulation changes (how the jaw, tongue, lips and other speech organs are involved in making a sound). These and additional terms are defined in the Glossary (Appendix Sixteen). As a child's speech and language develops, their ability to be verbally understood can be impacted by many variables effecting their articulation, such as delayed or disordered oral motor development, speech motor development, integration of speech motor control (motor planning), cognitive development, and/or sensory impairments. An assessment of a child's skills in the area of language and speech motor development can reveal either typical or atypical speech patterns (phonological processes) as children develop verbal speech.

Studies have shown that children who have articulation disorders experience educational, vocational, and social consequences (e.g., Shriberg, 1980). Speech sound development develops over time during the toddler and preschool years. A leading role for the jaw has been implied in clinical models of early speech development (Hayden & Square, 1994). There is a range of time when children may develop and master speech motor control, a beginner speaker may articulate sounds in words using total jaw movement, whereas a speaker who is combining words may articulate sounds in words using refined, flexible, independent movement of the articulators, using jaw, lip, and tongue movements. Speech motor development entails the sequential emergence of articulatory control (Green, Moore, Reilly, 2002). As children's language and speech motor control develop, their use of phonological rules and processes changes. A phonological delay can be characterized by a child's use of typical speech patterns (phonological processes) or inaccurate production of sounds in words past the age at which correct production typically occurs for most children. A phonological disorder can be characterized by a child's use of atypical speech patterns which may cause their speech to be unintelligible. This is thought to be possibly related to an underlying difficulty with the rules of how sounds are used in a child's language, a motor delay/disorder, and/or sensory impairment. Appendix 8 includes some typical phonological processes that are present and when they begin to disappear. Appendix 9 includes some atypical phonological processes children may develop.

Oral motor disorders are also significant factors that frequently impacts on the development of a child's expressive language skills is the development of the oral motor system or the use of the muscles in the mouth. These children may have an appropriate vocabulary size, however the quality of their sound production and utterances are of significant concern to the parents and/or evaluator. Children who demonstrate weakness or difficulty with their oral motor system may present with many of the same intelligibility and expressive language difficulties as children with phonological or developmental delay (e.g. they may consistently leave off final sounds).

♦ Oral motor impairments refer to impairments in muscle function which may include difficulties in movements for non-speech activities as well as speech. With that in mind, assessment should include information regarding feeding; the child's ability to handle different tastes, textures or temperatures; movement patterns of the jaw, tongue, and lips; and speech production. Speech tasks should include single words as well as conversational speech.

Several scales and checklists which provide a standard to follow when assessing oral motor skills are available. Please refer to the procedures listed in Appendix 3.

Identification of oral motor disorders should include the following:
1. Assessment of sound production skills in conversational speech as well as single words.
2. Analysis of the phonological systems for children who have a vocabulary of more than 50 words and who continue to have issues related to the quality of their speech sound production.
3. Assessment of sensory and oral motor movement patterns both in speech and non-speech activities.
4. Differential assessment of speech sound production during imitative vs. non-imitative tasks.

To differentiate oral motor disorders from childhood apraxia of speech, see the chart on pages 11 and 12.

Clinicians should be aware studies of the relation of oromotor nonspeech activities to speech production have been documented in the literature. Forest, K. et al. (2008) found their investigation did not support the use of nonspeech oral motor exercises (NSOMEs) as an effective procedure for improving speech sound production. An evidenced-based systematic review of the effects of Nonspeech Oral Motor exercises on speech by McCauley et al. (2009) found insufficient evidence to support or refute the use of oral motor exercises to produce effects on speech.

Children at-risk for autism spectrum disorder

Since ongoing concern about a child's qualitative performance in the areas of social/emotional or interpersonal skills and/or play interest and/or sensory domains is one of the biological factors to consider it is important that when we evaluate a child with a speech/language delay we also look at these other areas. Yet, we also know that it is very difficult for an evaluator to distinguish among late bloomers, toddlers with language disorders, and children with autism spectrum disorders under the age of three.

As an aid in making these kinds of distinctions, Dr. Rhea Paul from Southern Connecticut State University was asked to list the risk factors identified in research on early communication disorders that are most typically associated with each of these three conditions. She developed the following table to assist early intervention professionals in assessing children with early language and communication problems. It is vital to remember, though, that there are no acid tests, no hard and fast rules for accurately determining diagnosis or prognosis in children under three. A child may seem to have all the risk factors for one condition at 24 months, but look significantly different by 36 months. There is no single test or symptom that would allow for a positive identification of any of these categories. The best we can do is to get a detailed picture of the child's skills through an in depth, multidisciplinary assessment including intensive parent involvement, compare our findings to what the research literature tells us, and put our heads together to come up with the tentative description that seems to best fit the child's current presentation. In all cases, though, reassessment should be ongoing with more formal reassessment near the child's third birthday to determine whether we see growth, stagnation, or regression in each area of development.

Indicators of Risk (Paul, 2007)

	Late Bloomer	Language Delay/Disorder	ASD
Gestures	• Uses gestures to communicate	• Few communicative gestures	• Few communicative gestures • Rarely points • May use unconventional gestures
Gaze	• Uses gaze to regulate interaction • Mutual gaze • Three point gaze	• Uses gaze to regulate interaction • Mutual gaze • Three point gaze	• Less use of gaze to regulate interaction • Reduced use of three point gaze
Affect	• May be labile	• May be labile	• Labile or passive/aloof • Fails to share affect consistently with others
Preverbal communicative initiations	• Reduced frequency of communication • May use more requests than comments	• Reduced frequency of initiating communication • Uses more requests than comments	• Reduced frequency of initiating communication • Reduced range of communication; rarely comments or initiates joint attention
Responsiveness	• Responds to gestures and words of others	• Responds to gestures	• Limited responsiveness to words and gestures
Imitation	Little spontaneous verbal imitation	• Little spontaneous verbal imitation	• Limited motor and vocal imitation when asked • May use immediate and/or delayed echolalia non-communicatively.
Play	• Limited symbolic play	• Mostly exploring and grouping	• Mostly exploring and grouping • Construction play may be better than symbolic • May use toys in unusual ways (e.g., spinning) • May show high interest in numbers and letters • May prefer puzzles and cause/effect toys
Peer interactions	• May have peer problems due to	• May have peer problems due to	• May have peer problems due to

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	Late Bloomer	Language Delay/Disorder	ASD
	limited communication skills	limited communication skills • May prefer adults • May have difficulty joining in peer play	limited communication • skills • May prefer adults • May have difficulty joining in peer play
Sounds	• Uses few CVC and two syllable words	• Few consonants • Limited variety in babbling • Vowel errors	• May have a range of sounds, but they are not used communicatively
Words	• Small vocabulary for age	• Small vocabulary for age • Few verbs	• Small vocabulary for age
Adaptive Skills	• Expressive communication is lowest	• Communication is lowest	• Socialization is lowest
Restricted Interests & Repetitive Behaviors			• May be present
Parental Characteristics	• May remember other "late bloomers" in the family	• Low SES • Low maternal education • Directive, non-contingent interactive style • High level of concern	• High level of concern • May have other family members with autism or language disorders

ELIGIBILITY

A child referred for communication concerns and not found eligible due to:

- child did not have a diagnosed condition found on the Birth to Three website
- child did not receive a -2SD in one developmental domain
- child did not receive a -1.5SD in two developmental domains

Then they may be eligible for Birth to Three services due to the following:

Children with a delay of -2 standard deviations below the mean in expressive language ONLY are eligible for Connecticut's Birth to Three System if one of the following BIOLOGICAL FACTORS is present:

1. Chronic Otitis Media (duration of six months or longer)
2. Oral motor disorders
3. Moderate to severe phonological impairment (fewer than 65% of consonants correct in a 5-minute continuous speech sample)
4. Immediate family history (parents or sibling) of language impairment or developmental delay
5. Significant birth history verified through medical records including
   - congenital infection (e.g., toxoplasmosis, syphilis, rubella, cytomegalovirus)
   - craniofacial anomalies
   - birth weight less than 1500 grams (about 3 pounds)
   - hyperbilirubinemia at a level requiring exchange transfusion
   - ototoxic medications (harmful to the ear)
   - bacterial meningitis
   - Apgar scores of 0-4 at one minute and 0-6 at five minutes
   - mechanical ventilation lasting more than 5 days
   - head trauma associated with loss of consciousness or skull fracture
6. ongoing concerns by the family or the evaluator about the child's qualitative performance in the areas of social/emotional or interpersonal skills and/or play interest and/or sensory domains

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The biological factors listed above raise specific concerns about the possibility of a language disorder or delay rather than just a child that is slow to speak.

Within the statement of eligibility in each evaluation report, it is important to identify specifically how the child was determined to be eligible or not eligible, including the presence of one or more biological factors.

Suggestions for families and children who are determined to be not eligible for Connecticut's Birth to Three System can be found on the next page.

Intervention

For children with expressive language delays (-2 SD in expressive language with a biological factor)

Intervention begins with the way families are included in the evaluation/assessment process and the writing of a family-centered report (Alvares,1997). If a child is eligible, strategies to work with the family so that they may enhance the child's language skills throughout their daily routines may consist of (but are not limited to) the following:

♦ Short-term Individualized Family Service Plans (IFSPs) of 3-6 months
♦ Small group settings with typical peers in natural environments for general language stimulation (See CT Birth to Three System Service Guideline #2: Natural Environments)
♦ Consultation and training resources for parents (See resources listed in Appendix 4)

Strategies for children found <u>not to be eligible</u> for the Birth to Three System

Supports offered may include:
♦ Ages and Stages/Help me Grow information given to parents and parents assisted to refer
♦ Information given to parents on facilitating language development at home
♦ Books as listed in Appendix 4 of this guideline
♦ Milestones to look for in 3-6 months whose absence might prompt a re-referral.
♦ List of community resources given to parents for activities to foster language (e.g., childcare, play groups, library story hours)
♦ Referral to other agencies for family support as needed (Parent Aids, Family Resource Centers, Parents as Teachers and other programs.)

Parents may always choose to access speech therapy services directly outside of the Birth to Three System. Programs should assist parents by providing recommendations of at least three individuals or agencies they can contact.

DIAGNOSED CONDITIONS RELATED TO SPEECH

Childhood Apraxia of Speech (CAS)

Diagnosis by a **speech and language pathologist** of *Childhood Apraxia of Speech* (also sometimes called Developmental Apraxia of Speech) results in eligibility for Birth to Three services. CAS encompasses apraxia of speech with known neurological causes (e.g. intrauterine stroke, infections, head trauma), it can occur as a primary or secondary sign in children with complex neurobehavioral disorders (e.g., genetic, metabolic) or it could not be associated with any known neurological or complex neurobehavioral disorder. CAS is a neurological childhood speech sound disorder in which the prevision and consistency of movements underlying speech are impaired in the absence of neuromuscular deficits (e.g. abnormal reflexes or abnormal muscle tone). The core impairment in planning movement sequences of the body parts needed for speech. The child knows what he or she wants to say, but the brain is not sending the correct instructions to move the body parts of speech the way they need to be moved. (American Speech-Language-Hearing Association,2007). To experience what it might feel like, try repeating the phrase: "Quid Pro Quo Pros" several times quickly (McMillan, 2007).

When CAS appears in very young children, the child:

- May demonstrate limited cooing and babbling
- Produces first words after some delay, but these words are missing sounds
- Produces only a few different consonant sounds
- Is unsuccessful at combining sounds
- Simplifies words by replacing difficult sounds with easier ones or by deleting difficult sounds (Although all children do this, the child with childhood apraxia of speech does so more often).

Identification

Differential diagnosis between oral motor impairments and Childhood Apraxia of Speech (CAS) can be made primarily through non-speech and imitative tasks by a **speech language pathologist**. Children with CAS do not have difficulty in movements for non-speech activities. They have a speech disorder that interferes with their ability to correctly produce sounds, syllables, or words but generally there is no muscle weakness. Of significance, this disorder is, by definition, inconsistent. Parents may report that they have heard the child say a word "as clear as a bell" once, but the child has never said it again. There is much disagreement about whether CAS can actually be diagnosed in children under the age of three. The American Speech-Language-Hearing Association has not yet issued specific clinical recommendations and guidelines on the youngest age at which CAS can be diagnosed. Until such resources are available, differential diagnosis of CAS in very young children and in the context of neurological and complex neurobehavioral disorders may require provisional diagnostic classifications, such as CAS can not be ruled out, signs are consistent with CAS, or suspected to have CAS (ASHA, 2007). To consider such a diagnosis, a language sample must be completed. At a minimum, the child must be able to participate sufficiently in the assessment. Unless the child can attempt to imitate utterances that vary in length and/or phonetic complexity (such as imitating /i/, then /mi/, the /'mit/ or /o/, then /no/ then /nope/), it is very difficult to make a definitive diagnosis (Strand, 2003).

Speech behaviors which may provide clues for diagnosing CAS are as follows:

1. Greater difficulty is evident with words that have more than one syllable. Syllables may be omitted, revised or added.
2. In a speech sample, a combination of error patterns may occur. These often include at least two or three error patterns such as, prolongations, repetitions of sounds or syllables, distortions, or additions.
3. The rate and rhythm of a child's speech may also seem "different." (It may have a halting pattern or quality.)

Characteristics of non-speech behavior which differ from a diagnosis of CAS may be as follows:

1. There is difficulty in performing <u>voluntary</u> movements in the muscles of the mouth, especially those which involve the tongue and lips (e.g. can't imitate lifting their tongue on command but may do it when licking peanut butter off their lip.)
2. Demonstration is needed to perform movements that require more than one pattern.
3. There is a high incidence of other difficulties in fine motor coordination, gait, and alternating movements of the extremities and tongue.

Severe Phonological Disorders are also known as speech sounds disorders.

Compiled by the Advisory Board of the Childhood Apraxia of Speech Assoc. of North America

Dysarthria	Verbal Apraxia	Severe Phonological Disorder
Decreased strength and coordination of speech musculature that leads to imprecise speech production, slurring, and distortions	No weakness, incoordination or paralysis of speech musculature	No weakness, incoordination or paralysis of speech musculature
Difficulty with involuntary motor control for chewing, swallowing etc. due to muscle weakness and incoordination	No difficulty with involuntary motor control for chewing, swallowing, etc. unless there is an oral apraxia	No difficulty with involuntary motor control for chewing and swallowing
Articulation may be noticeably "different" due to imprecision but errors are generally consistent	Inconsistencies in articulation performance—the same word may be produced several different ways	Consistent errors that can usually be grouped into categories (fronting, stopping, etc.)
Errors are generally distortions	Errors include substitutions, omissions, additions and repetitions, frequently include simplification of word forms. Tendency for omissions in initial position. Tendency to centralize vowels to a "schwaa"	Errors may include substitutions, omissions, distortions, etc. Omissions in final position more likely than in initial position. Vowel distortions not as common.
May be less precise in connected speech than in single words	Number of errors increases as length of word/phrase increases	Errors are generally consistent as length of words/phrases increases

Dysarthria	Verbal Apraxia	Severe Phonological Disorder
No difference in how easily speech is produced based on situation	Well rehearsed "automatic" speech is easiest to produce, "on demand" speech most difficult	No difference in how easily speech is produced based on situation
Typically no significant discrepancy between receptive and expressive language skills	Receptive language skills are usually significantly better than expressive skills	Sometimes differences between receptive and expressive language sills.
Rate, rhythm and stress of speech are disrupted specific ally related to the type of dysarthria (spastic, flaccid, etc.)	Rate, rhythm and stress of speech are disrupted, some groping for placement may be noted	Typically no disruption of rate, rhythm or stress
Monotone voice, difficulty controlling pitch and loudness	Generally good control of pitch and loudness, may have limited inflectional range for speaking	Good control of pitch and loudness, not limited in inflectional range for speaking
Voice quality may be hoarse, harsh, hypernasal, etc. depending on type of dysarthria	Age appropriate voice quality	Age appropriate voice quality

Intervention

Although there are several "name" approaches for CAS (e.g. STEPS, PROMPT, or others), the basic commonality of all approaches is that they require intensive direct service by a speech and language pathologist (SLP). But no matter which approach is selected, the elements of a successful approach will include use of physical prompting or cueing, building from sound sequences to words to carrier phrases, building from structured to spontaneous, and use of data to ensure accountability.

Even though the intervention is at a greater intensity than is typical in early intervention, it is still important that parents become active participants in the intervention process. Therapy for CAS requires focus and participation on the part of the child, family, and speech language pathologist. Parents can share information with the SLP about the child's personality and preferences that can be used to motivate the child. They can help the SLP understand how the child responds in frustrating situations and how they manage challenging behaviors. The need for multiple repetitions to develop motor skills to an automatic level is well established and forms a basis for treatment of CAS. Given the number of hours per day a child spends with family versus SLP, opportunities for practice are multiplied when parents encourage speech practice outside of early intervention visits. This promotes motor learning that goes beyond acquisition of motor skills. Motor skills are established through many repetitions of a movement. Motor learning is established when the motor skills are carried over to a functional task. The child that learns to say "more" with the speech language pathologist may learn the skills, but having opportunities to ask for "more" many times during the day at mealtime and snack time brings the motor learning into the real world where a child experiences the power of using his or her voice. Parents and other family members (particularly siblings) who are actively involved in the intervention process are more likely to be comfortable giving valuable feedback to the SLP.

Such feedback can help determine the next steps and will help the SLP determine what is working well and what is not working well for the family. (Ruth Stoeckel, 2001)

Well designed intervention for CAS should include:
⇒ Establishing a routine and format including addressing behavioral issues, establishing a repetition format, and determining motivators
⇒ Use of augmentative communication if the child is unable to communicate effectively. Some SLPs prefer picture exchange cards while others prefer sign language. This will not in any way inhibit the child's ability to learn to speak.
⇒ Motor planning program and stabilization. Touch cueing and physical prompting are critical elements, along with determining starting points and establishing a hierarchy. The challenge is to let the child seemingly set the stage for the sessions while, at the same time, achieving goals. Oral-motor work should never be done without a sound production goal in mind.
⇒ Generalization so that speech motor patterns become more automatic

Susan MacMillan, 2007

SPEECH SOUND DISORDERS (SSD)

There is a high correlation between some forms of SSD and difficulties with written language including reading, writing, spelling, and mathematics (Williams, A. L., McLeod, S., McCauley, R.J., 2010). Preston, J., & Edwards, M. L., (2010) suggest it would seem appropriate for SLP's to assess the phonological awareness (PA) skills of all children with SSD, perhaps paying attention to those who exhibit numerous atypical speech errors, as they may be at a slightly elevated risk for PA problems. Phonological awareness (PA) is a knowledge that involves an awareness of the sound structure of words. There is also evidence that children with speech sound disorders (SSD) of unknown origin (i.e., those with no known oral structural problems or developmental disorders) are at risk for preliteracy and literacy problems, particularly if they have an SSD and poor PA skills when they enter kindergarten (Nathan, Stackhouse, Goulandris, & Snowling, 2004). Preston et al. (2012) found different preschool speech error patterns predict different school-age clinician outcomes. Children with whom more than 10% of their speech sound errors were atypical had lower PA and literacy scores at school-age than children who produces fewer than 10% atypical errors (Preston et al., 2012). In short, although SSD presents focal challenges of relatively short duration for some children, for others, they are associated with difficulties that are neither confined to speech nor to early childhood (McCormack, McLeod, McAllister, & Harrison, 2009). SSDs can sometimes be described as atypical phonological processes.

Identification

In order to diagnose a Speech Sound Disorder that makes a child eligible for Connecticut Birth to Three services, the speech language pathologist must determine that a child meets the following diagnostic criteria:

◎ A score of -2SD on a standardized articulation test (e.g., Goldman-Fristoe Test of Articulation 2) and the presence of two or more atypical speech patterns (see list below)

<div align="center">OR</div>

◎ A score of moderate to severe impairment on the Percentage of Consonants Correct (PCC) assessment and the presence of two or more atypical speech patterns (see list below)

NOTE: *An audiological evaluation must be completed BEFORE direct speech services begin. An Interim IFSP must be completed with audiological, transportation, and any other services the team feels is appropriate (but not speech). The Initial IFSP still has to be completed 45 days from the referral date. For questions on completing an Interim IFSP, please see the IFSP handbook.*

The following list of atypical speech patterns which result in impaired intelligibility will be accepted by CT Birth to Three:

Vowel errors
Initial consonant deletion (e.g., up/cup)
Backing (substitution of front consonants with back consonants (e.g., cop/top)
Sound preference substitutions (e.g., overuse of a single consonant for a variety of consonants; or substitution of glottal consonants or /h/ for many other consonants
Reduplication (a CV syllable is repeated in a multisyllabic word (e.g., dinono/dinosaur)
Assimilation of consonants beyond 30 months of age (e.g., dod/dog) (generally a typical phonological process for younger children)

One of the most important considerations for determining the phonological status of a child and the need for intervention is the intelligibility of the child's spontaneous speech (Bernthal & Bankson, 1993). By observing and transcribing a spontaneous speech sample, a phonological/motor speech assessment and a percentage of consonant correct (PCC) assessment can be completed. If a standardized articulation test is used, it should be normed for children under 36 months. Shriberg and Kwiatkowsi (1982) and Khan-Lewis Phonological Analysis-2 (2002) created instruments for assessing the severity of involvement of the phonological system that provides a framework for assessment and management. A motor speech analysis will help the clinician systematically evaluate a child's motor speech system and identify the level or stage where problems occur (Hayden, 2004). Other assessment services should be provided to rule in or out a specific disabling condition (ASHA, 2004).

Another method for providing a measure of speech intelligibility and severity is to calculate Percentage of Consonants Correct (PCC) in a five minute continuous speech sample (Shriberg & Kwiatkowski, 1982). (see appendix 6 on how to calculate PCC)

Intervention

The management of phonological disorders in preschool children continues to be a source of debate in the literature (Balbata et al., 2006).   Law, Garret and Nye (2004) indicate speech language therapy might be effective for children with phonological or expressive difficulties. Currently there are a variety of programs and techniques available in the treatment of speech sound disorders. Examples and explanation of direct speech production interventions (e.g., Cycles Phonological Remediation Approach, Stimulability Intervention, Core Vocabulary) and speech interventions in broader contexts (e.g., PROMPT, Naturalistic Intervention for Speech Intelligibility and Speech Accuracy) can be found in Interventions for Speech Sound Disorders in Children (L. Williams, S. McLeod, R. McCauley, 2010). Some treatments are multisensory, using multiple modalities (tactile, auditory ,visual) to help remediate speech sound disorders. These techniques and programs designed to remediate phonological impairments should be such that parents/caregivers can generalize them into their routines, giving the child multiple opportunites to practice throughout the day.

CHILDHOOD ONSET FLUENCY DISORDER

It has long been recognized that young children learning language demonstrate normal developmental **disfluencies** (interruptions to the flow of talking) early on, which disappear as their expressive language skills mature. These developmental disfluencies are characterized by:

> ⇒ hesitations,
> ⇒ interjections of sounds, syllables, and words
> ⇒ word and phrase repetitions.

This characteristic of speech and language development is considered to be normal and therefore does not require any type of intervention, except to allay the parents' fears and concerns by explaining this course of normal development.

There is another category of young children generally between the ages of two and four who have disfluencies that are characteristic of true stuttering. They demonstrate Stuttering–Like Disfluencies (SLDs) which are characterized by:

> ⇒ part word and monosyllabic word repetitions
> ⇒ disrhythmic phonations

For a complete description of SLDs as compared to normal developmental disfluencies see Appendices 12 & 13. (diagnosis for SLD's also called Childhood Onset Fluency Disorder)

The presence of these characteristics indicates the possibility of **stuttering** rather than just normal developmental disfluencies. Age of onset for stuttering behavior ranges from 20 months to 69 months with the mean age being 32.76 months (Yairi & Ambrose, 1992).

The appropriate intervention for very young children who stutter is greatly debated in the research literature. There is general agreement that young children who stutter show greater improvements than older children or adults during treatment (i.e. they require fewer hours of treatment and treatment more often results in permanent remissions of stuttering.) However, there is considerable disagreement about the necessity of treating every child who stutters as soon after onset as possible and about the risks involved if their treatment is postponed for a while (Curlee & Yairi, 1997). Ezrati-Vinacour, R. et al (2001) found that from age 3, children show evidence of awareness of disfluency, but most children reach full awareness by age 5. Also, negative evaluation of disfluent speech is observed from age 4.

There are a number of published studies which demonstrate that anywhere from 32% to 80% of children diagnosed with stuttering experience spontaneous remission within 2 to 3 years of onset (and as soon as six months from onset) without intervention (Andrews & Harris, 1964; Ryan, 1990; Yairi & Ambrose, 1992; Yairi et al, 1996). These results have raised considerable questions as to the need for early intervention for young children who stutter. However, there is no conclusive research to provide the clinician a tool or checklist to use to definitively determine which children will and will not experience spontaneous remission.

Yairi and his colleagues in a longitudinal study (Yairi et al, 1996) compared children who experienced spontaneous remission with those who continued to stutter. The results indicated that children who stopped stuttering:

⇒ were younger
⇒ usually began to stutter before three years of age
⇒ were girls
⇒ had many more family members who stopped, rather than continued to stutter
⇒ frequency of SLDs per 100 syllables decreased by the 12th month post onset

Those children who continued to stutter

⇒ were older
⇒ began stuttering after age three
⇒ were boys
⇒ had relatives whose stuttering persisted
⇒ were children who continued to stutter 12 months after onset

Although this provides good prognostic information for the family and the clinician, it does not definitively determine which children will have remission and which are at risk for continuing to stutter into adulthood. Researchers are asking for more studies to be completed before recommended clinical practice or public policy with regard to fluency can be determined (Curlee & Yairi, 1997). Meanwhile, according to Zebrowski (1997), speech and language pathologists cannot wait for the research to be completed before forming clinical relationships with children who are stuttering and their families. The recommended intervention for these children prior to age three is usually done on an indirect basis, providing consultation to parents, monitoring, and documenting the changes in the child's stuttering behavior.

Identification

The incidence of children under the age of three who are diagnosed as having Childhood Onset Fluency Disorder is difficult to determine. The incidence of preschool children (age 2 through 5) is considered to be less than 1%. With the mean age of onset being 32.76 months, a significant number of the less than 1% would be over the age of three, leaving a very small number of children under the age of three.

The first step in early identification is to be able to make the differential diagnosis between normal developmental disfluencies and stuttering-like disfluencies (see Appendices 12 and 13.) Evaluators must be able to collect a thorough child and family history to determine:

⇒ the presence of stuttering among other family members
⇒ the exact age of onset of stuttering
⇒ the amount of time since the stuttering began
⇒ the number of SLDs per 100 syllables demonstrated during evaluation
⇒ type of stuttering behavior at onset
⇒ changes in the behavior since onset

This information is critical to making sound decisions regarding intervention and monitoring as the child matures and the length of time from onset of stuttering increases and the stuttering behavior changes. Please refer to Appendix 3 for more assessment information.

Intervention

Any child under the age of three, diagnosed by a speech-language pathologist as having Childhood Onset Fluency Disorder, are automatically eligible for Birth to Three services. The incidence of this is quite low and there is no conclusive method for identifying the children who will spontaneously stop stuttering.

Recommended intervention is determined by a number of factors such as age and sex of the child, time lapse since onset, family history, presence or absence of associated behaviors and coexisting language problems. According to Onslow, M. et al (1990) finding suggest that cases of early stuttering might be managed effectively by parents with limited expenditure of clinical time. Based upon these factors, intervention could include:

⇒ Providing information to parents regarding stuttering and its early progression

⇒ Monitoring the change in the frequency or type of disfluencies

⇒ Counseling families, especially when there is a family history of stuttering

⇒ Counseling families to evaluate and modify the verbal environment of the child

⇒ Counseling parents about their own possible anxiety surrounding the child's stuttering

The issue of transition to supports and services when the child and family exit Birth to Three at age three is particularly important for the child who is stuttering. The family history and the documentation of the progression of the stuttering behavior must be given to the speech pathologist responsible for intervention after age three. That information is critical to setting the course for ongoing treatment.

Strategies for children with disfluency found <u>not to be eligible</u>

Since these children were found to be normally disfluent, this characteristic of speech and language development does not require any type of intervention, except to allay the parents' fears and concerns by explaining this. The family should be instructed to call Infoline or their school district if the disfluencies do not decrease within 12 months after they began. Also Ages & Stages/Help me Grow would be a great resource to give to parents if they wish to continue to monitor their child's overall development.

CHILDREN FROM HOMES IN WHICH ENGLISH IS NOT THE PRIMARY LANGUAGE

Many families living in the United States speak limited or no English. Conducting valid assessments and providing effective intervention services to young children who are monolingual speakers of the majority community language is a challenging endeavor requiring a substantial knowledge base coupled with a wide array of specific clinical skills. At a minimum, speech-language pathologists and early childhood educators in the U.S. who typically provide services to children from English-only speaking families must have a clear understanding of the complex interactions between communication and cognitive, social, and emotional development in typical and atypical learners. (Kohnert et al.,2005). A child's and family's use of English must be considered before any evaluation is conducted. This consideration will give the clinician information regarding evaluation protocols and tests to use and whether a monolingual clinician, bilingual clinician, or a monolingual clinician using an interpreter would be best practice when conducting an evaluation or assessment.

> When communication is the concern, if the parent or primary caregiver is:
>
> ⌘ Bilingual English Proficient - use a Speech-Language Pathologist (SLP) proficient in English
>
> ⌘ Limited English Proficient - use a bilingual SLP or a monolingual SLP with an interpreter

Early Identification

It is important to ask more than whether or not the parent can speak English. More appropriate inquiries should explore how often English is spoken to the child and how often the parent talks to child in the non-English language.

The evaluation team should use a standardized test normed in the family's language whenever possible. A partial listing of available assessment instruments for children with limited English proficiency is provided in Appendix 3. Some of these instruments are literal translations of English tests that have not been validated for use in other languages. This list also includes several non-standardized inventories, checklists, and questionnaires that were developed or translated specifically for bilingual, bicultural assessments.

> ◊ **Given that a child should be assessed in the primary or dominant language of the home, the eligibility criteria are the same as for a native English speaking child. The child would have to show a significant language delay in their primary or dominant language. Connecticut's Birth to Three System does not serve children if they are significantly delayed only in their second language. Other programs may be available to enhance those English language learning skills.**

When assessing bilingual children, it is important for clinicians to be cognizant of the typical progression of second language acquisition. Second language acquisition is similar to, although not identical to, first language acquisition and because acquisition is a developmental process, children need adequate time to acquire a second language: 1-2 years for conversational skills (grammar, basic vocabulary, pronunciation), and 5-7 years to develop the academic linguistic proficiency (literacy, problem-solving, and critical thinking skills) needed for academic success

(Moore & Beatty, 1995.) The development of competence in English is a function of the level of competence previously developed in the first language (Cummins, 1984; Ortiz, 1994.)

It is the responsibility of the Birth to Three team to raise families' level of awareness about second language acquisition and bilingual issues and how they can best support their child's development. The parents should be supported for acknowledging the importance of the child's language development and then encouraged to communicate with the child in their native language, to enhance the child's intellectual, cognitive, and linguistic development (Moore & Beatty, 1995.) Learning a second language is easier for children if they have a good language base in their first language (Erickson, 1992.) According to Ortiz (1994), "…the native language is the foundation upon which English competence is built."

The following is a list of considerations team members should be cognizant of when they work with young children who live in homes in which English is not the primary language (Moore & Beatty, 1995):

1. The child with limited proficiency in English cannot be compared to a monolingual English speaker in the social-emotional, academic, cognitive, or communication domains. He or she can, however, be compared to his or her culturally and linguistically matched peers (e.g., in the rate of acquisition of English).
2. The child who is not fluent in English may appear hyperactive, or shy and withdrawn in an unfamiliar situation, depending on the child's personality or culture. This is not clearly indicative of a disorder.
3. The personality of the child and his or her adaptability may determine the way that he or she reacts to a new situation, such as an unfamiliar, English-speaking preschool classroom.
4. Learning the child's experiential background is essential in adapting a test that appropriately measures the child's skills.
5. The child's motivation and attitude towards learning English and interacting with English-speaking peers may affect his or her development of English proficiency.

Programs should use "best practice" strategies to procure speech pathologists who meet the requirements to assess and serve individuals who are limited English proficient including 1) establishing contacts, 2) establishing cooperatives, 3) establishing networks, or 4) establishing interdisciplinary teams. However, programs may need to use a monolingual speech pathologist with an interpreter.

Guidance for using an interpreter

An interpreter is under the supervision of the speech pathologist at all times. An interpreter's activities should be reviewed and assigned by the clinician. The following "best practice" list should be considered when using an interpreter (Moore & Beatty, 1995.):
⌘ Interpreter should receive training in basics of assessment (role of the interpreter, functions of the SLP and interpreter, testing protocols), intervention, and conferencing.
⌘ In assessment, the interpreter should have an understanding of the rationale, procedures, and information that is obtained from tests.
⌘ Interpreter should have a high degree of proficiency in both English and minority language.
⌘ Interpreter should have high school diploma, adequate communication skills, ability to relate to clinical population.
⌘ Interpreter should understand both mainstream American culture and the culture of the child and family.
⌘ Interpreter should usually not be a family member or family's friend if it raises issues of confidentiality. Children should never be used to interpret.

Appendix 14 has a list of other rules for using an interpreter. It is important to remember that all reports, correspondences and the IFSP must be translated. Skilled verbal interpreters are not necessarily also skilled written translators.

Intervention for children determined to be <u>eligible</u> for the Birth to Three System when tested in their primary language

While it is preferable to have someone work with the family who is fluent in the primary language of the home and who is very familiar with the particular culture, it is also clear that few early interventionists meet these characteristics. This is even more true as families from an ever wider variety of countries and cultures move into Connecticut. Given this, the order of preference would be as follows:

Primary Interventionist as Service Coordinator	Consultant	Interpreter
bilingual/bicultural speech-language pathologist		
bilingual/bicultural other interventionist	bi- or monolingual speech-language pathologist	
bilingual speech-language pathologist		
bilingual other interventionist	bi- or monolingual speech-language pathologist	
monolingual speech-language pathologist		bilingual/bicultural if possible or solely bilingual
monolingual other interventionist	monolingual speech-language pathologist	bilingual/bicultural if possible or solely bilingual

See Appendix 15 for American Speech-Language-Hearing Association (ASHA's) recommendations.

Other suggestions include:

⌘ If the parent is interested, help connect them with English Language Learner (ELL) classes.
⌘ Small group settings with typical peers in child's native language in a natural environment.

Strategies for children found <u>not to be eligible</u> for the Birth to Three System
⌘ If possible, give family information regarding normal speech language development and early literacy skills in their native language.
⌘ Give the parents information on available parent training (e.g. Hanen program); or information on how to facilitate and monitor child's early language and literacy development in the home.
⌘ Encourage the family to call Infoline again to re-refer if they have questions or don't feel child is making progress in 3-6 months.
⌘ Give the family a list of community resources available or activities to foster language development in the family's native language.
⌘ Encourage the family to enroll child in community playgroups, if appropriate.
⌘ Inform families who speak Spanish about availability of the Spanish version of "Ages and Stages" if they enroll with the Help Me Grow program.

International Adoptions

Children from non-English speaking countries who are adopted by families in Connecticut should be evaluated in the language they *currently* hear daily. However, when communication is the only area of concern, it is prudent to allow time for the child to adjust to his or her new culture and language before making a referral to Birth to Three. If the delay is in English speech only, children adopted from non-English speaking countries will not be eligible until the child has been living with his or her adopted family for at least six months and even then the evaluator must use clinical opinion about whether the child is a typical English language learner or whether the child has a true language disorder.

Hearing Children of Deaf Parents

Early Identification

There are several systems of signing used in this country, such as, ***Signing Exact English*** (SEE) and ***American Sign Language*** (ASL). Clinicians should be aware they may need to find interpreters who are proficient in the family's sign language. Connecticut has the Department of Rehabilitation Services-Deaf and Hard of Hearing Services that may be of assistance.

Research has shown that a hearing child of deaf parents may have sign as a first language and that oral language skills typically will develop normally (Prinz & Prinz,1979). It is important for early interventionists to have a working knowledge of beginning sign.

As with other languages, programs should be encouraged to use interventionists fluent in the primary sign language; if none are available, use monolingual interventionists with a sign language interpreter for the parents. See Appendix 4 for resources.

Eligibility for these children is the same as for other children but similar to the children adopted from other countries, the evaluators must distinguish between normal English language learning and a language disorder.

Intervention for children found to be <u>eligible</u> for the Birth to Three System
⌘ IFSPs with family's goals; the plan should support family if they would like intervention conducted in both sign and speech
⌘ Encourage family to contact Department of Rehabilitative Services-Deaf and Hard of Hearing Services for support groups
⌘ Encourage family to participate in small group settings with their child in the company of typical speaking peers and also peers with deaf parents
⌘ Primary interventionists should be fluent in spoken language and sign or monolingual with a sign interpreter

Strategies for children found <u>not to be eligible</u> for the Birth to Three System
⌘ Encourage the family to enroll their child in community playgroups, nursery school or child care for purposes of learning spoken English
⌘ Provide the family with information regarding normal speech and language development
⌘ Encourage the family to contact the Department of Rehabilitative Services-Deaf and Hard of Hearing Services for support groups
⌘ Inform the family about any appropriate parent training programs; videos and books
⌘ Encourage the family to re-refer if they don't feel the child is making progress in 3-6 months
⌘ Give the family a list of community resources available or activities to foster language development
⌘ Offer the family the Ages and Stages Questionnaire through the Help Me Grow program.

CONCLUSION

The fields of speech-language pathology, early intervention and second language acquisition have a great number of talented researchers and practitioners. The findings and recommendations included in these guidelines represent the current standard for those fields of study as well as The Connecticut Birth to Three System.

Attention is being paid to early brain development and the importance of the first three years of life at many levels including the media and in Congress. Initiatives in areas such as school readiness and high quality early care and education will ultimately enhance young children's language learning. Our ability to identify issues such as fluency and oral motor skills that influence later language skills can help early interventionists with differential diagnoses. And as the global village shrinks, we will increasingly encounter families who speak languages that a decade ago might have seemed rare.

Given all this, the responsibility of the early interventionist, the family and the community at large to enhance each child's development will be no less than dynamic.

Connecticut's Birth to Three System is currently designed to support families of children who have significant developmental delays. Within and beyond this framework, these guidelines should be helpful to anyone who is concerned about a child who may be challenged by a speech-language delay or disability.

APPENDICES INDEX

Connecticut Birth to Three Mission

MISSION

The Mission of the Connecticut Birth to Three System is to strengthen the capacity of Connecticut's families to meet the developmental and health-related needs of their infants and toddlers who have delays or disabilities. The system will ensure that all families have equal access to a coordinated program of comprehensive services and supports that:

- foster collaborative partnerships

- are family centered

- occur in natural environments

- recognize current best practices in early intervention

- are built upon mutual respect and choice

Partnerships: *Effective supports for families depend on providers and families working closely with a variety of community, state and federal programs.*

Family Centered: *Evaluation, planning and services are designed around the family's needs, concerns, and priorities and keep the whole family in mind.*

Natural Environments: *Providing services within activities that occur in the child and family's home and community offers opportunities for the child to learn and practice new skills and participate more fully in his regular daily routine.*

Best Practices: *Research and laws continually require new approaches to services. Providers use up-to-date, effective service strategies.*

Respect and Choice: *Families choose their Birth to Three program. Decisions about services and supports reflect the family's knowledge, beliefs, hopes, family characteristics and culture. Achievements are made by families and providers working together on the same level and recognizing that each has important information to share.*

Connecticut Birth to Three System

Evaluation/Assessment Protocol

The primary purpose of an eligibility evaluation is to determine whether or not the child meets eligibility requirements for Connecticut's Birth to Three System by having a significant developmental delay. It is not expected that all the elements of this can be completed during the initial evaluation, however attention should be paid to each area, especially if communication is the only area of concern. A family history and assessment of phonology / oral motor skills may provide the information needed to determine eligibility if the child's delay is in expressive language only. If the child is determined to be eligible, all the areas can be explored in greater detail during ongoing assessments as a part of service delivery.

Referral - Where communication is a concern, Infoline will recommend to families that they should pursue a hearing assessment with their physician prior to their evaluation.

1st Phone Call - Explore with the family whether communication is the only area of concern. Discuss what the child understands and how the child is understood. Ask whether they have scheduled an audiological assessment.

Areas to consider during evaluation or assessment

➢ Confirm that there has been an audiological exam to rule out hearing loss / Recommend if needed but be prepared to offer to arrange it for them with your program as payer of last resort if child is eligible for Birth to Three.
➢ Family history of language delays and disorders including fluency
➢ Medical history (any significant birth history or history of otitis media)
➢ Presence of pre-linguistic skills
➢ Standard communication skills including vocabulary, syntax and semantics
➢ Other ways of communicating; gestures, sounds, facial expressions.
➢ Oral motor skills; including
   * imitation - note any struggle
   * feeding; taste, texture and temperature
   * patterns of speech production - typical or atypical error patterns
   * degree of intelligibility
   * child's apparent frustration
➢ Phonological skills
   * note pattern of speech (typical vs. atypical) in a language sample (phonological processes)
   * Articulation assessment with standardized scores
   * Percentage of Consonants Correct (PCC)
   * degree of intelligibility
   * stimulability (need auditory cues, visual cues, tactile cues)
   * child's age
   * child's apparent frustration
➢ Pragmatics (how the child uses language)
   * reasons why child communicates (e.g., requesting, protesting, commenting, establishing joint attention and reference)
   * means by which child communicates (e.g., pointing, vocalizing)
   * frequency of initiating communication (normal milestones: 1 act/minute at 12 months; 2 acts/minute at 18 months; 5-7 acts/minute at 24 months)
➢ Symbolic Play
➢ Fluency
   * type and frequency of disfluent speech
   * child's awareness of speaking difficulties
   * any secondary behaviors
   * parental response to disfluent speech

Assessment Instruments and Procedures

The following is a listing of suggested instruments and techniques which will assist the team in determining the presence or absence of delayed communication, as well as further assessing the underlying causal or influencing factors. For the purpose of eligibility evaluation, instruments or parts of instruments, as well as more informal measures supported in the literature, provide the basis for most effectively determining the presence of a significant delay or disorder in a timely fashion. This is the purpose of the eligibility evaluation.

Once determined eligible, part of the IFSP process will most likely include a plan for more in-depth assessment of the child's skills to form the basis of an effective treatment plan. This list is not meant to be complete or exhaustive, but provides an overview of many current tests and procedures.

⇨ **Suggested Evaluation Instruments and Procedures: Expressive Language Delays**

Instruments:

Preschool Language Scale- (5th. Ed.) (Source: Harcourt Assessment/Psychological Corporation)
　　　Assessment of speech and language development (auditory comprehension and expressive communication), articulation screening and other supplemental areas, for children 2 weeks to 6-11 months. Responses obtained via testing and parental report. Provides standard scores, percentiles and age equivalency. Spanish edition available (see below)

The Rossetti Infant-Toddler Language Scale (Source: LinguiSystems)
　　　Assesses pre-verbal and verbal areas, within specific areas: Interaction-Attachment, Pragmatics, Gesture, Play, Language Comprehension and Language Expression. Responses are observed, elicited, and/or reported. Criterion-referenced, with basal and ceiling levels for children age birth to 36 months. Also available in Spanish (Latin American dialect)

Early Language Milestone Scale (2nd. Ed.) (ELMS-2) (Source: Pro-Ed)
　　　Assesses language development for children birth to 36 months and speech intelligibility for children 18 to 48 months. Responses obtained by history, testing and incidental observation. Provides standard scores, percentiles and age equivalency.

MacArthur-Bates Communicative Development Inventories Second Edition (source: Brookes Publishing)
　　　An inventory completed by parents/caregivers to assess language development in children 8 to 37 months of age. CDI scores are converted to percentile ranks. Spanish adaptation available (see below).

Receptive-Expressive Emergent Language Scale (3rd. Ed.) (Source: Pro-Ed)
　　　Assesses language development (Receptive Language and Expressive Language) for children birth to 36 months, via parent/caregiver interview. Yields receptive and expressive language ages.

Sequenced Inventory of Communication Development-Revised (SICD-R) (Source: Slosson)
 Assesses receptive and expressive language for children 4 months to 4 years. Responses are obtained via testing and parent report. Scoring is a record of successes and failures, with comparison of the percentage of successes at each age range with normative data to determine receptive and expressive communication ages. Spanish version available (see following pages).

Transdisciplinary Play Based Assessment-Second Edition (Source: Brookes Publishing)
 Assessment of a child's developmental skills and influencing factors in a transdisciplinary play approach for children from infancy to 6 years of age.

Communication and Symbolic Behavior Scales (Source: Brookes Publishing)
 Assesses communicative and symbolic skills of children 8 to 24 months via a norm-referenced rating scale. Videotaping recommended.

Vineland Adaptive Behavior Scales, Second Edition (Source: Pearson Assessments)
 Assesses personal and social skills for children from birth and older. Standardized measure, obtained via questionnaire format, providing standard scores, percentile ranks and age equivalent scores.

Procedures:

Spontaneous Language Sampling:
 Obtain a spontaneous language sample during play. Record and transcribe the sample. From this sample, information can be obtained regarding the child's syntactic skills, semantic development, pragmatic use of language and speech intelligibility. For children 18 months or older, a mean length of utterance (MLU) may be calculated to further evaluate the child's syntactic and morphologic development (Miller & Chapman, 1981, JSHR, 24).

⇨ **Suggested Evaluation Instruments and Procedures: Phonology/Oral Motor Skills**

Instruments:

Goldman-Fristoe Test of Articulation 2 (Source: Pearson Assessments)
 Assesses articulation skills in picture naming and story retelling format for children 2 years and older. Scoring is converted to percentile ranks.

Khan-Lewis Phonological Analysis, Second Edition (Source: Pearson Assessments)
 Assessment of 15 common phonological processes for children two years and older. Information is transferred from the Goldman-Fristoe Test of Articulation and analyzed. Norms are provided for comparison, with percentile ranks and age equivalencies.

Hodson Assessment of Phonological Patterns, Third Edition (Source: Pro-Ed)
 Assesses phonological processes with emphasis on presence and severity of disorder. The task involves a picture or object naming format. Responses are taped, phonetically transcribed and analyzed. Percentage of occurrence scores, phonological deviancy scores and severity intervals are obtained. Standardized, norm and criterion referenced. For ages 2-8 (normative data for ages 3-8)

Oral Motor/Feeding Rating Scale (Source: Harcourt Assessments)
 Rating scale to evaluate oral motor/feeding dysfunction. One year through adult.
Apraxia Profile (Source: Harcourt Assessment)

Profile of apraxic characteristics in children 2 years and older.

Oral Motor Exercises (Source: LinguiSystems)
Reproducible workbook pages for developing vowel and consonant sounds for children ages 2-6..

Procedures:
Percentage of Consonants Correct (PCC): (Shriberg & Kwiatowski, 1982)
Obtain and transcribe a 5-minute continuous speech sample to analyze the child's phonological system.

Assessment of Speech Intelligibility:
Based on informal sample, determine percentage of intelligibility with familiar and unfamiliar listeners, in known and unknown context.

Assessment of the presence or absence of typical and idiosyncratic phonological processes:
See Appendices 8 and 9 for characteristics of phonological development of children as reviewed in the literature.

Pre-Feeding Skills Second Edition: A Comprehensive Resource for Mealtime Development: Suzanne Evans-Morris & Marsha Dunn Klein (Harcourt Assessment)
A comprehensive resource guide for feeding development.

⇨ **Suggested Evaluation Instruments and Procedures: Fluency**

Instruments:

Stuttering Prediction Instrument for Young Children (SPI): (Source: Slosson)
Assesses type and frequency of disfluent speech to directly measure severity and predict chronicity in children ages 3-8 years.

Systematic Fluency Training: (Source: Abilitations-The Speech Bin)
Training program with assessment component.   Provides direct procedures for assessment for children ages 3-9 years.

The Fluency Companion: (Source: LinguiSystems)
Manual of checklists and guidelines for assessment and diagnosis of stuttering for children ages 3-18 years. Easily used in interview format. Will print by request.

Procedures:

Percentage of Stuttered Syllables (%SS)
Obtain a spontaneous speech sample in several speaking contexts (structured, semi-structured, unstructured). Tape record and transcribe the sample. Calculate the number and type of disfluencies. Assess the rate of stuttering and co-occurrence of non-verbal behaviors, as well as type of disfluency and situations in which disfluency occur.

⇨ **Suggested Evaluation Instruments: Children who are English Language Learners**

Instruments:
Assessment of Asian Language Performance information about Vietnamese, Cantonese, Mandarin, Japanese, Khmer, Korean, and other languages (Source: Academic Communication Associates)

Bilingual Language Proficiency Questionnaire (Source: Academic Communication Associates)

       Means to gain information about speech and language developmental milestones and skills, functional use of Spanish and English and parental concerns. Questions provided in Spanish and English. English/Vietnamese Edition also available.

BRIGANCE Assessment of Basic Skills – Revised Spanish Edition (Source: Curriculum Associates, Inc.)

       Criterion referenced measure that can be used as part of a play based assessment. Spanish adaptation of the **Comprehensive Inventory of Basic Skills.**

Fundacion MacArthur-Bates Inventario del Desarrollo de Habilidades Comunicativas: (Source: Brookes Publishing)

       Spanish adaptation of MacArthur Communicative Development Inventory (see preceding pages). Does not yield a standard score.

Preschool Language Scale-5. Edition.-Spanish: (Source: Harcourt Assessment)

       This is a direct translation of the English version (see preceding pages). No normative information for native Spanish speakers.

Sequenced Inventory of Communication Development: (Source: Slosson)

       Cuban-Spanish translation of the English version. Assesses receptive and expressive language for children 4 months to 4 years of age. Direct translation of the English version (see above).

Spanish Articulation Measures (SAM): (Source: Academic Communication Associates)

       Spontaneous word production tasks using familiar pictures. Assesses production of phonemes and processes. Ages 3 and up.

Spanish Language Assessment Procedures (SLAP): (Source: Academic Communication Associates)

       Assessment tasks for children age 3-9 years. Criterion referenced measures included.

Publisher Information for Instruments and Procedures:

Harcourt Assessment/ Psychological Corp. Harcourtassessment.com	LinguiSystems Inc. Linguisystems.com	Paul H. Brookes Publishing Co. brookespublishing.com
19500 Bulverde Blvd	3100 4th Avenue	PO Box 10624
San Antonio, Texas 78259	East Moline, IL 61244	Baltimore, MD 21285
1-800-872-1726	1-800-776-4332	1-800-638-3775
Pearson Assessment Pearsonassessments.com	**Pro-Ed Proedinc.com**	**Slosson Educational Publications Slosson.com**
5601 Green Valley Dr.	8700 Shoal Creek Boulevard	PO Box 544
PO Box 99	Austin, Texas 78757	East Aurora, NY 14052
Bloomington, MN 55437	1-800-897-3202	1-888-756-7766
1-800-627-7271		
The Speech Bin Speechbin.com	**Curriculum Associates, Inc. Curriculumassociates.com**	**Academic Communication Associates Acadcom.com**
P. O. Box 922668	P. O. Box 2001.	PO Box 4279
Norcross, GA 30010	North Billerica, MA 01862	Oceanside, CA 92052
1-800-850-8602	1-800-225-0248	888-755-9558

Other Websites

www.asha.org - the professional association for speech pathologists and audiologists
www.speechpathology.com - contains links to a large number of related sites
www.ECTACenter.org - National Early Childhood Technical Assistance Center
www.hanen.org - information and links on language development
www.CLAS.uiuc.edu - culturally and linguistically diverse resources for early intervention
www.ncela.gwu.edu/pubs - National Clearinghouse for Bilingual Education publication "If Your Child Learns in Two Languages, August 2000. Also available in Armenian, Chinese, Haitian, Korean, Spanish, and Vietnamese
www.apraxia-kids.org – a tremendous amount of information on childhood apraxia of speech from the Childhood Apraxia of Speech Association
www.promptinstitute.com – the website for the "Prompts for Restructing Oral Muscular Targets" program to treat childhood apraxia of speech
www.infomedseminars.com – publishers of the STEPS Program, "Systematic Therapy Program Sequence" to treat Childhood Apraxia of Speech
www.speakingofspeech.com – is a site for SLP's seeking and giving advice on therapy and caseload management issues

Resources

DVDs/Online

Learning Language and Loving It: DVD provides real-life examples of teachers using responsive strategies in play and in daily activities with their students to create stimulating, interactive language-learning environments   Available from www.hanen.org

It Takes Two to Talk : DVD Specifically created for parents of children with language delays. Real-life video examples of the strategies in action, giving parents a clear idea of what to do and how to do it. Available from www.hanen.org

You Make the Difference Teaching Tape DVD shows parents simple, yet powerful techniques you can use during everyday routines with your child Available from www.hanen.org

Speech, Language, and Hearing Milestones: Birth to Age Five DVD
Provides examples of normal speech, language, and hearing development and tips on when to seek services from an SLP or audiologist. A good way to educate and inform parents, teachers, and health professionals. Available from the American Speech-Language-Hearing Association 1-888-498-6699 or www.asha.org

Target Word: The Teaching Tape 1 hour, 23 minutes
All SLPs will find the video helping with the impact of language facilitation strategies. The video follows real parents and children showing parents applying the strategies they've learned and the difference they've made. Available from www.hanen.org

The Magic with Music: DVD shows simple techniques you can use while sharing songs and rhymes with your child that will help you enrich social, language, and early literacy development

More than Words DVD specifically created for parents of children on the autism spectrum

LITERATURE

****Beyond Baby Talk – From Sounds to Sentences – A Parent's Complete Guide to Language Development, Apel, Kenn and Masterson, Julie J.
An excellent resource for parents and caregivers that covers the stages of speech and language development for infants, babies, toddlers, and preschoolers. (226 pages) $15 Available from the American Speech-Language-Hearing Association 1-888-498-6699 or www.asha.org

****How Does Your Child Hear and Talk Slide Wheel, ASHA has taken the "How Does Your Child Hear and Talk brochure and turned it into a fun slide wheel. Find the child's age and read about typical language development. Also available in Spanish   Available from the American Speech-Language-Hearing Association 1-888-498-6699 or www.asha.org

****You Make the Difference - Hanen Program, Ayala Manolson, Barb Ward and Nancy Dodington, 1995 (90 pages)
Excellent, illustrated, colorful, parent-friendly book focusing on the 3A method: Allowing children to lead; adapting to share the moment and adding new experiences and words. Good everyday activities are highlighted.   Available from www.hanen.org Also in Chinese, Spanish, French, and Dutch

****<u>Parent Articles for Early Intervention</u>, edited by Marsha Dunn Klein
Reproducible articles in several areas. There are more articles available in cognitive development than in S&L. There is a nice section on the use of music. 220 loose-leaf pages in a ring-binder. Available from <u>www.pearsonassessments.com</u>, wwwproedinc.com

<u>It Takes Two to Talk</u>, Ayala Manolson, 2004 (145 pages)
This workbook offers the 3A system with a lot of poems and cartoons. It is long but the summary pages are very effective. Available from www.Hanen.org

<u>Early Communication Games</u>, Deborah G. Casey-Harvey (229 pages)
Offers a good parent checklist but activities geared for clinicians. Available from www.Proedinc.com

****indicates Parent recommendation

Appendix Five

Language Interpretation and Translation Services in Connecticut

<u>**Braille Transcription**</u>
- Conn. Braille Assn.- Westport (203) 227-5243
- Access USA (800) 263-2750
- Southeast CT Community Center of the Blind- New London (860) 447-2048

<u>**Language Interpretation/Translating**</u>
- Accuworld, LLC (860) 561-3388
- Casa Boricua de Meriden (203) 235-1082
- Centro de la Comunidad- New London (860) 442-4463
- Centro de la Comunidad- Norwich (860) 886-0001
- Community Action Committee of Danbury (203) 744-4700
- CTE- Stamford (203) 327-3260
- Diocese of Norwich- Haitian Ministries- Uncasville (860) 848-2237
- Diocese of Norwich-Hispanic Ministries- Windham (860) 456-3349
- Global Link Translations (877) 451-6655
- Hilda M. Santana d/b/a/ Language Link Consortium (860) 647-0686
- International Institute of Conn.- Bridgeport (203) 336-0141
- International Institute of Conn.- Hartford (860) 692-3085
- Interpreters and Translators, Inc (860) 647-0686
- Language Line Services, Inc. (877) 886-9402
- The Language Link of CT (860) 561-5438
- Language Learning Enterprises, Inc (telephone interpreting) (888) 464-8553
- New Opportunities for Waterbury (203) 575-9799
- RDP Agency, LLC (860) 881-8181
- Spanish Community of Wallingford (203) 265-5866
- Spanish Speaking Center – New Britain (860) 224-2651

<u>**Sign Language Interpretation**</u>
- Woodfield Family Services VTDD (888) 676-8554
- Dept. of Rehab. Services-Deaf and VTTY (860) 231-1690
  Hard of Hearing Services Hartford (860) 708-6796

<u>**Telecommunication Relay Services**</u>
- Relay Services TDD (800) 842-9710
  (800) 833-8134

How to calculate Percentage of Consonants Correct (PCC)

To accurately calculate PCC, a child should be able to produce multiple words for a speech sample. To calculate PCC:

1. Transcribe or record a speech sample of at least 100 words from the child
2. Transcribe the speech sample phonetically. Indicate where the child produces consonants in error by highlighting incorrect pronunciations in a different color or using a specific symbol to denote errors.
3. Add up the total number of consonants and the total number of correct consonants. Divide the number of correct consonants by the total number of consonants. Multiply the answer by 100 to determine the PCC.
4. Use the PCC to determine the severity of the speech disorder (see below).

Degree PCC

mild 85-100% PCC
mild-moderate 65-85% PCC
moderate to severe 50-65% PCC
severe less than 50% PCC

Birth to Three Speech Guidelines Summary Reference and Recommendation Locator

Look below at the considerations/child and family profile section. Where "present" is indicated, look along that same row to the right to see if the child would be eligible. Listed further to the right is the number of the page that contains the rationale and recommendations.

Considerations/Child and Family Profile								Birth to 3 Eligibility	Rationale	Recommendations
Sig. (-2SD) Expressive Lang. Delay	Sig. Receptive Language Delay	Oral Motor Disorder	Moderate to Severe Phonological Impairment	Chronic Otitis Media minimum 6 months duration	Family History of Lang. Impairment or Dev. Delay	Sig. Birth History According to list in Evaluation Procedure	Concerns about Interpersonal, Play Interest or Sensory Domains	Eligible?	On Page...	On Page...
Present	Present							Yes	1	9
Present		Present						Yes	4	9
Present			Present					Yes	4	9
Present				Present				Yes	3	9
Present					Present			Yes	8	9
Present						Present		Yes	8	9
Present							Present	Maybe	8	9

Diagnosed Conditions Resulting in Eligibility for Birth to Three			Other Considerations			Birth to 3 Eligibility	Rationale	Recommendations
Child Onset Fluency Disorder	Childhood Apraxia of Speech	Speech Sound Disorder	English not the Primary Language in the Home	Hearing Child of Deaf Parents	Adopted from a Non-English Speaking Country	Eligible?	On Page...	On Page...
Present						Yes	15-16	17
	Present					Yes	10-12	12-13
		Present				Yes	13-14	14
			Present			Maybe	18	19-20
				Present		Maybe	21	21
					Present	Maybe	21	21

Chronology of Typical Phonological Processes

From Grunwell (1982)	2.0-2.6	2.6-3.0	3.0-3.6	3.6-4.0	4.0-4.6	4.6-5.0	5.0->>>	
Weak Syllable Deletion	■	■	■	■ ■				efant for elephant
Final Consonant Deletion	■	■ ■	■					kuh for cup
Reduplication	■							dinono for dinosaur
Consonant Harmony	■	■ ■						
Cluster Reduction (initial) Obstruent+approximant	■	■ ■	■	■	■			ruk for truck
/s/ + consonant	■ ■	■	■	■	■			top for stop
Stopping /f/	■ ■	■						pish/fish
/v/	■	■	■ ■	■				lub/love
/θ/ > [f] /θ/	■	■	■	■	■	■ ■	■ ■	
/Δ/ > [d] or [v] /Δ/	■	■	■	■	■ ■	■	■	
/s/	■	■	■					tad/sad
/z/	■	■ ■	■	■				doo/zoo
Fronting '[s] type' /Σ/	■	■	■ ■	■	■	■		
Fronting [ts, dz] /tΣ/, /δz/	■	■ ■	■	■	■ ■	■	■	
Fronting /k, g, ☠/	■	■ ■	■	■				tat/cat do/go rin/ring
Gliding /r/>[w]	■	■ ■	■	■	■ ■	■ ■	■ ■	wabbit
Context Sensitive Voicing	■	■ ■	■					

Solid line = typical age at which the pattern is seen, Dashed line = process begins to disappear

CT Birth to Three System   Service Guideline #3   Revised October, 2014

Unusual / Idiosyncratic Phonological Processes

Process	Definition and Example
Atypical Cluster Reduction	Deleting the member that usually remains play → [le]
Initial Consonant Deletion	Deletion of the word-initial consonant or cluster shoe→ [u]. star→ [ar]
Medial Consonant Deletion	Deleting intervocalic consonants beetle → [bio]
Backing of Stops	Replacing a front consonant by phonemes made posterior to the target (typically velars) toe → [ko]
Apicalization	A labial is replaced with an apical (tongue tip) consonant bow → [do]
Glottal Replacement	Substitution of a glottal stop for a consonant usually in the medial or final position bat → [ba/]
Backing of Fricatives	Replacing fricatives with ones made in more posterior positions suit → [Σut]
Medial Consonant Substitutions	Replacing intervocalic consonants with one or more phonemes butter → [b∧ja]
Denasalization	Substituting a nasal consonant with a homorganic nonnasal no → [do]
Devoicing of Stops	Replacing a voiced stop with a voiceless phoneme (usually a stop) in word-initial positions daddy→ [tΘdi]
Fricatives Replacing Stops	Substituting a fricative consonant for a stop consonant bat → [bΘs]
Stops Replacing Glides	Substitution of a stop for a glide yellow → [dΕlo]
Metathesis	Revering the position of two sounds; the sounds may or may not be adjacent most → [mots]
Migration	The movement of a sound from one position in a word to another position soap → [ops]
Sound Preference Substitutions	Replacing groups of consonants by one or two particular consonants /s/, /z/, /Σ/, /τΣ/, /δΖ/ → [L]

From: Lowe (1994)

English Phonological Development

<24	24	28	3	3	4	4	4	>48

N
m
n
h
t
k
f
w
N
h
g
s
j (y)
d
l >>>
r >>>
Σ(sh) >>>
tΣ (ch) >>>
δZ (j) >>>
v >>>
z >>>
zh >>>
Τ (t) >>>
Δ (th) >>>
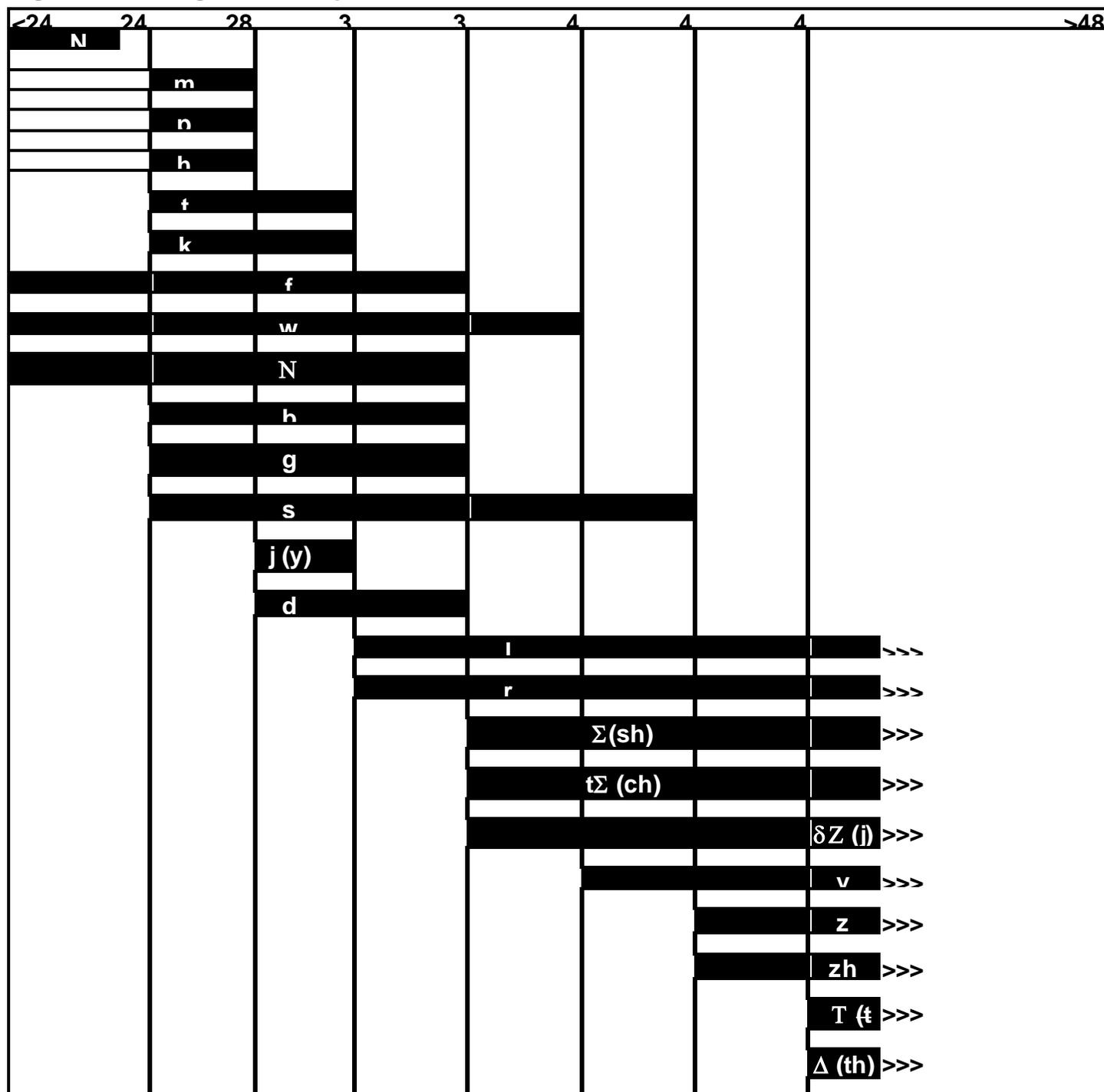
Average age estimates (50%) and upper age limits (90%) of customary consonant production. When the percentage correct at 24 months exceeds 70%, the bar extends to "less than 24." When 90% level was not reached by 48 months, the bar extends to "greater than 48." (After Prather, D. Hedrick, and C. Kern, Articulation development in children aged two to four years. Journal of Speech and Hearing Disorders, 40, 179-191, 1975.)

From: Hixon, T., Shriberg, L. & Saxman, J. (1980) (Eds.). Introduction to Communication Disorders. Englewood Cliffs: Prentice-Hall.

Appendix Eleven

Spanish Phonological Development

Age (Years)	2	3	4	5	6	7
p	████					
b	████	██				
m	████					
t	████					
k	████					
g	████	██				
y	████					
*x	████	████	████	████	████	
*l	████	██				
c	████					
f	████					
*d	████	████	████	████	████	
n	████					
*s	████	████	████	████		
ñ	████					
r	████	██				
r	██	████	████	████	████	

Average Customary Age of Production for Consonant Phonemes in Spanish.
Data from Melagra (1976) and Merino (1983a).
*Age discrepancies between the two studies.

Continuum of Disfluent Speech Behavior

Continuum of Disfluent Speech Behavior

More Usual

(1) Typical Disfluencies

Hesitations (silent pauses)

Interjection of sounds, syllables or words

Revisions of phrases or sentences

Phrase repetitions

Monosyllabic word repetitions. Two or less repetitions per instance, even stress no tension

Part-word syllable repetitions. Two or less repetitions per instance, even stress no tension

(3) Cross-Over Behaviors

(2) Atypical Disfluencies

Monosyllabic word repetitions (3 or more repetitions per instance or uneven stress)

Part-word syllable repetition (3 or more repetitions per instance or uneven stress)

Sound repetitions

Prolongations

Blocks

Increased tension noted, e.g.., tremor of lips or jaw or vocal tension

More UNusual

(3) Cross-Over Behaviors

(1) *Typical disfluencies* in preschool children's speech listed in the order of expected frequency (hesitations the most frequent). These disfluencies are relatively relaxed, as, for example, noted by repetitions being even in rhythm and stress however, if any are noticeably tense, then they are considered atypical

(2) *Atypical disfluencies* that are very infrequent in the speech of children. More characteristic of what listeners perceive as stuttering. If in a speech sample of 200 syllables or more there is more than 2% atypical disfluency this should be a basis for concern, especially if airflow or phonation is disrupted between repetitions or if a schwa sounding vowel is substituted in the repetitions of a syllable. Blocks and other signs of increased tension and fragmentation of the flow speech should be the basis for immediate concern.

(3) *Cross-over behaviors* on the continuum, such qualitative features as the number of repetitions per instance, the stress pattern involved and the presence of tension distinguish typical and atypical disfluencies

From Curlee, 1993, p.26

Appendix Thirteen

Guidelines for Differentiating Normal from Abnormal Disfluencies

Behavior	*Stuttering*	*Normal Disfluency*
Syllable repetitions:		
a) Frequency per word	More than two	Less than two
b) Frequency per 100 words	More than two	Less than two
c) Tempo	Faster than normal	Normal tempo
d) Regularity	Irregular	Regular
e) Schwa vowel	Often present	Absent or rare
f) Airflow	Often interrupted	Rarely interrupted
g) Vocal tension	Often apparent	Absent
Prolongations:		
h) Duration	Longer than one second	Less than one second
i) Frequency	More than 1 per 100 words	Less than 1 per 100 words
j) Regularity	Uneven or interrupted	Smooth
k) Tension	Important when present	Absent
l) When voiced (sonant)	May show rise in pitch	No pitch rise
m) When unvoiced (surd)	Interrupted airflow	Airflow present
n) Termination	Sudden	Gradual
Gaps (silent pauses):		
o) Within the word boundary	May be present	Absent
p) Prior to speech attempt	Unusually long	Not marked
q) After the disfluency	May be present	Usually absent
Phonation:		
r) Inflections	Restricted; monotone	Normal
s) Phonatory arrest	May be present	Absent
t) Vocal fry	May be present	Usually absent
Articulating Postures:		
u) Appropriateness	May be inappropriate	Appropriate
Reaction to Stress:		
v) Type	More broken words	Normal disfluencies
Evidence of Awareness:		
w) Phonemic consistency	May be present	Absent
x) Frustration	May be present	Absent
y) Postponements (stallers)	May be present	Absent
z) Eye Contact	May waver	Normal

From Van Riper, C. (1971) p.28.

Appendix Fourteen

Guidelines for Working with an Interpreter

1. Learn proper protocols and forms of address (including a few greeting and social phrases) in the family's primary language, the name they wish to be called, and the correct pronunciation.
2. Introduce yourself and the interpreter, describe your respective roles, and clarify mutual expectations and the purpose of the encounter.
3. Learn basic words and sentences in the family's language and become familiar with special terminology they may use so you can selectively attend to them during interpreter-family exchanges.
4. Meet regularly with the interpreter in order to keep communications open and facilitate an understanding of the purpose of the interview, meeting, or home visit. At a minimum, meet with the interpreter before meeting with the parent(s).
5. During the interaction, address your remarks and questions directly to the family (not the interpreter); look at and listen to family members as they speak and observe their nonverbal communication.
6. Avoid body language or gestures that may be offensive or misunderstood.
7. Use a positive tone of voice and facial expressions that sincerely convey respect and your interest in the family, and address them in a calm, unhurried manner.
8. Speak clearly and somewhat slowly, but not more loudly. Limit your remarks and questions to a few sentences between translations and avoid giving too much information or long complex discussions of several topics in a single session.
9. Avoid technical jargon, colloquialisms, idioms, slang, metaphors, similes, and abstractions.
10. Avoid oversimplification and condensing important explanations. Repeat important information more than once.
11. Give instructions in a clear, logical sequence; emphasize key words or points, and offer reasons for specific recommendations.
12. Periodically check on the family's understanding and the accuracy of the translation, by asking the family member to repeat instructions or whatever has been communicated in their own words, with the interpreter's facilitation, but avoid literally asking: "Do you understand?"
13. When possible, reinforce verbal information with materials written in the family's language and visual aids or behavioral modeling if appropriate. Before introducing written materials, tactfully determine the client's literacy through the interpreter.
14. Be patient and prepared for the additional time that will inevitably be required for careful interpretation.

Interpreters must:

- demonstrate proficiency in both English and the second language
- understand their role and why they are being used
- follow the ethics of interpreting and have particular competence in maintaining confidentiality
- have a fundamental knowledge, in both languages, of any specialized terms or concepts
- show a sensitivity to the culture of the person with limited English proficiency
- demonstrate the ability to accurately convey information in both languages
- use the interpretation mode that best enhances comprehension and encourages direct communication between the parent(s) and the provider
- reflect the style and vocabulary of the speaker, including level of formality and use of slang as well as the emphasis and degree of emotion of the speaker
- ensures that the interpreter understands the message by asking for clarification or repetition if unclear
- remains neutral where there is conflict between the parent(s) and the provider
- does not project his or her own values onto the parent(s) and identifies and separates personal beliefs
- identifies and correct his or her own mistakes; and
- addresses cultural based miscommunication by 8identifying instances in which cultural differences between the parent(s) and provider have the potential to seriously impair communication

Who can interpret?

- professionals from a language bank
- bilingual professionals from a health or education background
- someone who can read, write and use the two languages fluently

Except in an emergency, do not use relatives or friends for interpreting because it may breach confidentiality or make the parent reluctant to share important personal information. In addition, family and friends usually are not competent to act as interprete5rs, since they are often insufficiently proficient in both languages, emotionally biased, unskilled in interpretation, and unfamiliar with specialized terminology. It is never acceptable to use a child to interpret for adults, since it undermines family authority; making a parent dependent on the child.

Adapted from Lynch, E.W., & Hanson, M.J. (1992). Developing cross-cultural competence: A guide for working with young children and their families. Baltimore, MD: Paul H. Brookes Publishers and the Office of Civil Rights of the U.S. Department of Health and Human Services guidance standards.

ASHA Guidelines for Monolingual and Bilingual Speech-Language Pathologists

Monolingual Speech-Language Pathologists and Audiologists

Guidelines for practitioners who do not speak the language of the client should include the ability to:

- describe the process of normal speech and language acquisition for both multilingual and monolingual individuals by using a trained interpreter/cultural mediator to gather information and data from the client/family/caregiver and being familiar with behaviors that reflect the typical acquisition process of monolingual and multilingual individuals;
- conduct culturally and linguistically appropriate assessments by knowing the limitations and possible cultural and linguistic biases of standardized test;
- know the types of and need for alternative forms of assessment;
- identify individuals who need to be referred to multilingual clinicians;
- distinguish behaviors that are attributed to cultural or linguistic differences; and
- utilize interpreters, translators, cultural mediators, and multilingual professionals to involve the family in the assessments process and to share results of the assessment.

Bilingual Speech-Language Pathologists and Audiologists

To be defined as a multilingual speech-language pathologist or audiologist and provide assessment and intervention services in the client's home language, it is mandated that the speech-language pathologist and audiologist possess the following competencies:

- language proficiency-native or near native fluency in both the client's language and in English;
- normative processes- ability to describe the process of normal speech and language acquisition for both bilingual and monolingual individuals and how these processes are manifested in oral and written language;
- assessment-ability to administer and interpret formal and informal assessment
- procedures to distinguish between communication differences and communication disorders;
- intervention-ability to apply intervention strategies for communication disorders in the client's home language; and
- cultural sensitivity-ability to recognize cultural factors which affect the delivery of speech-language pathology and audiology services to non-English speakers.

Glossary

Adaptive - eating, dressing
American Sign Language - a language using signs with its own rules for combining words
Auditory Stimuli - something you can hear (tapping the table to help with rhythm)
Bilateral - both sides (both ears)
Child Onset Fluency Disorder – young children generally between the ages of two and four who demonstrate disfluencies characteristic of true stuttering or stuttering-like disfluency
Childhood Apraxia of Speech (CAS) - trouble coordinating the mouth muscles for speech only (also called Developmental Verbal Dyspraxia or Developmental Apraxia of Speech)
Cognition - thinking, problem solving, playing
Criterion referenced - performance is based on passing a criteria rather than on what a sample did
Diadochokinesis - the rapid repetition of syllables
Disfluency - a disruption in the smooth flow of sounds and words
Dyspraxia / Apraxia - difficulty coordinating the mouth muscles with no impaired muscles (the prefix "DYS" means there is some problem, "A" means one can't do it at all)
Expressive Language - what we communicate to others, how we let others know what we want
Frequency Specific Hearing Loss - some sounds cannot be heard because the hearing loss affects only that frequency (like radio signals that fade out while others stay clear)
Monaural - one ear
Motor - using big (gross) and small (fine) muscles
Motor Planning - preparing and moving muscles to do something like climb onto a tricycle
Multi-Domain Instrument -a test that looks at communication, cognition, motor, etc.
Norm-referenced - performance is compared to a sample (called a norming sample)
Oral Motor - the muscles in and near the mouth
Otitis Media - an ear infection, with or without pain but with fluid in the middle ear
Phoneme - / / the smallest sound that makes a difference in meaning
Phonemics - studying meaningfully distinct sounds (bat vs. pat)
Phonetic Analysis - [ ] analyzing each perceptibly different sound meaningful or not (nap vs. pan)
Phonological rules - regularly occurring events like deleting a weak syllable (efant for elephant)
Phonology - the system of speech sounds used and the rules for putting them together
Receptive Language - what we understand from others,
Signing Exact English - using signs to communicate following English syntax (rules)
Specific Expressive Language Delay - when understanding is fine and there are no other problems
Speech - what we say, one way to express what you want
Speech Sound Disorder – include problems with a person's articulation (making sounds) and phonological processes (sound patterns)
Standard Deviation - a statistical measure that spreads the difference in scores out evenly from the average. Negative standard deviations (SD) are below average and -2 SD is lower than -1 SD
Stuttering - interruptions to the flow of speech that are more frequent or intense than regular disfluencies, stuttering may include a reaction to having trouble speaking smoothly
Syntax - the rules for sentence structure
Tactile Stimuli - something you can feel (touching your neck as a cue for the "k" sound)
Verbal Dyspraxia - difficulty coordinating the mouth muscles just for speech in the absence of a muscle disorder (used as a synonym for apraxia of speech)
Visual Stimuli - something you can see (like pointing to your neck or lips to show someone else from where the sound comes)

Appendix Seventeen

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