



**BRAIN, SPEECH AND LANGUAGE DEVELOPMENT**  
**BIRTH THROUGH AGE 2**

<u>AGE</u>	<u>BRAIN DEVELOPMENT</u>	<u>SPEECH AND LANGUAGE</u>
<b><u>0-3 Months</u></b>	<ul style="list-style-type: none"> <li>Brain stem fully functional</li> <li>Rapid neural-synapse development reinforced by repeated stimulation</li> </ul>	<ul style="list-style-type: none"> <li>Coos and gargles</li> <li>Produces single syllables</li> <li>Begins blowing bubbles</li> <li>Follows moving person with eyes</li> <li>Quiets in response to sound</li> <li>Smiles/coos in response to another smile/voice</li> <li>Cries differently when tired, hungry, in pain (1-4 months)</li> </ul>
<b><u>3-6 Months</u></b>	<ul style="list-style-type: none"> <li>Synapse development in cerebrum and in the parietal and occipital lobes allows for better vision and eye-hand coordination</li> </ul>	<ul style="list-style-type: none"> <li>Babbling begins (VCV, “aga”)</li> <li>Puts lips together to say “m”</li> <li>Nasal tone is heard</li> <li>Vocalizes pleasure and displeasure</li> <li>Stops vocalizing when adult enters</li> <li>Self-initiated vocal play</li> <li>Coos, chuckles, gurgles, and laughs</li> <li>Babbles to self, others, and objects</li> <li>Babbling shows pitch and inflection change</li> <li>Vocally expresses eagerness</li> <li>Laughs when playing with objects</li> <li>Fixes gaze on face</li> <li>Responds to name by looking for voice source (4-8 months)</li> <li>Occasionally vocalizes in response to speech</li> </ul>
<b><u>6-9 Months</u></b>	<ul style="list-style-type: none"> <li>Neural pathways have formed sound template for native language(s)</li> <li>Begins to hear syllables, then distinct world boundaries</li> </ul>	<ul style="list-style-type: none"> <li>Uses m, n, t, d, b, p, y in babbling multiple syllables</li> <li>Babbles tunefully singing tones</li> <li>Uses wide variety of sound combinations including no-English sounds</li> <li>Imitates intonation and speech sounds in his/her own repertoire</li> <li>Reduplicative babbling begins - bababa</li> <li>Looks at family member when named</li> <li>Comprehends “no” inhibits on command</li> <li>Interest in pictures maintained for full minute while they are named</li> <li>Searches for partially hidden object (4-8 months)</li> <li>Initiates vocalizing to another person</li> <li>Enjoys being played with (4-8 months)</li> <li>Different vocalizations for different states- anger, contentment, hunger (4-8 months)</li> </ul>
<b><u>9-12 Months</u></b>	<ul style="list-style-type: none"> <li>Hippocampus becomes fully functional</li> <li>Ability to determine and remember cause-effect</li> <li>Ability to retain words increases</li> </ul>	<ul style="list-style-type: none"> <li>Vocalizes during play</li> <li>Vocalizes to mirror</li> <li>Jabbers loudly wide variety of sounds and intonations</li> <li>Uses most sounds (C&amp;V) in vocal play beginning of phonetic drift</li> <li>May acquire first true word (10-18 months)</li> <li>Variiegated babbling begins- combines different syllables in vocal play</li> <li>Begins to relate symbol and object- first true word</li> <li>Will give block, toy or object on request</li> <li>Understands and follows simple commands regarding body action</li> <li>Shouts or coughs to attract attention</li> <li>Shakes head “no” and pushes undesired objects away</li> <li>Waves “bye”</li> <li>Begins directing others’ behavior physically (pats, pulls, tugs on adult)</li> <li>Extends arms to be picked up</li> <li>Participates in “pat-a-cake,” “peek-a-boo”</li> </ul>

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<u>1 - 1 1/2 Years</u>	<ul style="list-style-type: none"> <li>• Synapses in prefrontal lobe expand rapidly</li> <li>• Child now able to plan and think logically</li> </ul>	<ul style="list-style-type: none"> <li>• Uses sentence - like intonations (jargon)</li> <li>• Uses most vowels and consonants in jargon</li> <li>• Omits final consonants and some initial consonants</li> <li>• Basically unintelligible with the exception of a few words</li> <li>• CV structure (bo/boat) emerge</li> <li>• Accurately imitates some words</li> <li>• Uses 3 to 20 words</li> <li>• Says "all gone" (emerging negation)</li> <li>• Answers question, "what's this?"</li> <li>• 50% of all utterances are nouns</li> <li>• Mean length of response is one or two words</li> <li>• Requests objects by pointing and vocalizing or possibly using a word approximation</li> <li>• Solicits attention vocally, physically, and possibly with a word (Mommy)</li> <li>• Says "bye" and possibly a few other conversational ritual words such as "hi," "thank you," and "please"</li> <li>• Protests by saying "no," shaking head, moving away, frowning, or pushing object away</li> <li>• Acknowledges speech of another by giving eye contact, vocally responding, or repeating a word said</li> </ul>
<u>1 1/2 - 2 Years</u>	<ul style="list-style-type: none"> <li>• Full cortex consumes twice as much energy as adult</li> <li>• Synapses' density almost twice that of adult</li> <li>• Synapses not stimulated will wither-a process called neural-pruning</li> </ul>	<ul style="list-style-type: none"> <li>• Words increasing in frequency, jargon almost gone by 2 years</li> <li>• Asks questions by raising intonation at end of phrase</li> <li>• Approximately 65% intelligible</li> <li>• Words produced with CVC structure (hot)</li> <li>• Comprehends approximately 300 words</li> <li>• Listens to simple stories - especially likes ones heard before</li> <li>• Responds approximately to yes/no questions</li> <li>• Uses approximately 50 recognizable words</li> <li>• Uses names of most familiar objects</li> <li>• Produces animal sound or uses it's name</li> <li>• Verbalizes toilet needs (closer to 2 years)</li> <li>• Identifies and names five or more pictures by 2 years</li> <li>• Says own name on request-refers to self with full name</li> <li>• Verbalizes "no"</li> <li>• Combines two words into phrases, may use three-to-four-word response (2 years)</li> <li>• Follows directions using one or two spatial concepts-in/on</li> <li>• Negation used in form of "no" (no bed)</li> <li>• Possessive emerging (Daddy car)</li> <li>• Refers to self with pronoun and name (me Tommy)</li> <li>• 33% of utterances are nouns</li> <li>• Says "what's that" to elicit attention</li> <li>• Begins using single words and two-word phrases to command (move), indicate possession (mine), express problems (owee)</li> <li>• Much verbal turn-taking</li> </ul>