

**Supplemental Material S3.** Auditory speech characteristics of the different motor speech syndromes.

Syndrome	Perceptual speech characteristics
Flaccid-paretic dysarthria	<ul style="list-style-type: none"> <li>- Respiration: shortened breath groups, frequent inspirations, audible/strenuous inspiration, excessive use of expiratory reserve volume</li> <li>- Voice level: low volume, low pitch</li> <li>- Voice quality: breathy/harsh</li> <li>- Voice stability: voice breaks/voice fading</li> <li>- Articulation: imprecise consonants, reduced vowels</li> <li>- Resonance: hypernasality</li> <li>- Articulation rate: reduced</li> <li>- Fluency: inappropriate pauses</li> <li>- Prosodic modulation: monoloudness/monopitch</li> </ul>
Spastic-paretic dysarthria	<ul style="list-style-type: none"> <li>- Respiration: shortened breath groups, frequent inspirations, audible/strenuous inspiration, excessive use of expiratory reserve volume</li> <li>- Voice level: high volume, high pitch</li> <li>- Voice quality: strained-strangled/harsh</li> <li>- Articulation: imprecise consonants, reduced vowels</li> <li>- Resonance: hypernasality</li> <li>- Articulation rate: reduced</li> <li>- Fluency: inappropriate pauses</li> <li>- Prosodic modulation: monoloudness/monopitch</li> </ul>
Ataxic dysarthria	<ul style="list-style-type: none"> <li>- Respiration: dyscoordination of speech and breathing, inspiratory speaking</li> <li>- Voice quality: harsh/strained-strangled</li> <li>- Voice stability: fluctuations of pitch/loudness/voice quality, voice tremor (~ 3 Hz)</li> <li>- Articulation: irregular articulatory breakdowns</li> <li>- Resonance: intermittent hyponasality</li> <li>- Articulation rate: reduced</li> <li>- Prosodic modulation: excess and equal stress, reduced or excessive prosodic modulation of pitch/loudness</li> </ul>
Hypokinetic dysarthria	<ul style="list-style-type: none"> <li>- Respiration: shortened breath groups, frequent inspirations</li> <li>- Voice level: low volume</li> </ul>

	<ul style="list-style-type: none"> <li>- Voice quality: breathy/harsh</li> <li>- Voice stability: voice tremor (&gt; 10 Hz)</li> <li>- Articulation: imprecise consonants, reduced vowels, particularly towards the end of utterances</li> <li>- Articulation rate: normal to (apparently) accelerated</li> <li>- Fluency: repeated sounds, syllables, and words (iterations), speech hesitations, short rushes of speech</li> <li>- Prosodic modulation: monoloudness/monopitch, blurring of syllable boundaries</li> </ul>
Hyperkinetic (choreatic) dysarthria	<ul style="list-style-type: none"> <li>- Respiration: sudden involuntary inspirations/expirations, excessive use of the expiratory reserve volume</li> <li>- Voice quality: harsh/strained-strangled</li> <li>- Voice stability: excess pitch/loudness variations, fluctuations of voice quality, involuntary vocalizations/voice stoppages</li> <li>- Articulation: distorted consonants and vowels, irregular articulatory breakdowns, occasional smacking or clicking noises</li> <li>- Resonance: intermittent hyper-/hyponasality</li> <li>- Articulation rate: reduced</li> <li>- Fluency: inappropriate pauses, speech hesitations (blocks)</li> <li>- Prosodic modulation: excess and equal stress, reduced or excessive prosodic modulation of pitch/loudness, prolonged intervals (e.g., single sounds, syllables)</li> </ul>
Apraxia of speech	<p>Segmental level</p> <ul style="list-style-type: none"> <li>- Sound distortions (gradual aberrations from target sounds)</li> <li>- Distorted sound transitions (disturbed coarticulation)</li> <li>- Perceived phonemic errors (change of perceived phonemic category), i.e., perceived sound substitutions, elisions, additions</li> <li>- Distorted perceived sound substitutions or additions</li> <li>- Error variability (a same sound or utterance may be produced accurately or inaccurately, and multiple inaccurate productions may have different error qualities)</li> </ul> <p>Suprasegmental (prosodic) level</p> <ul style="list-style-type: none"> <li>- Within-word-pauses, i.e., inter-/intrasyllabic pauses (possibly filled, including intrusive schwa), inappropriate inter-word pauses</li> <li>- Sound prolongations of consonants and vowels (beyond a speaker’s possible overall reduced articulation rate)</li> </ul>

	<ul style="list-style-type: none"> <li>- Syllabic, “scanning” speech (due to syllable segregation and/or syllable isochrony)</li> <li>- slow overall speech rate, overall disruption of speech fluency, overall disruption of regular speech rhythm and intonation</li> </ul> <p>Level of speech behavior</p> <ul style="list-style-type: none"> <li>- Articulatory groping, attempts to self-correct; difficulty initiating speech</li> <li>- Increased speech effort (e.g., audible consequences of exaggerated speech movements)</li> </ul> <p>The definition of subtypes is based on the relative predominance of phonetic and prosodic abnormalities:  <i>Phonetic subtype</i>: characterized by a predominance of segment level abnormalities  <i>Prosodic subtype</i>: characterized by a predominance of prosodic level abnormalities  <i>Mixed phonetic-prosodic subtype</i>: no predominance of phonetic or prosodic abnormalities</p>
Acquired neurogenic stuttering	<ul style="list-style-type: none"> <li>- Disruptions of the speech flow due to stuttering-like repetitions of sounds, syllables or words (distinct from articulatory groping in apraxia of speech or conduit d’approche phenomena in phonological aphasia)</li> <li>- Prolongations and/or blocks</li> <li>- No remarkable articulatory deficits or additional symptoms indicative of any of the standard speech motor syndromes (e.g., hypokinetic dysarthria)</li> </ul>
Impoverished speech drive (adynamic speech)	<ul style="list-style-type: none"> <li>- Markedly reduced speech output</li> <li>- Reduced initiation/maintenance of speech due to an apparent lack of motivation to engage in verbal activity</li> <li>- Normal to decreased articulation rate</li> <li>- Hypophonia</li> <li>- Flattened modulation (monotony)</li> <li>- No remarkable articulatory deficits or signs of articulatory effort, but possibly undershooting articulation</li> </ul>