Practical Insights for Motor Speech Disorders (MSD)

1. Use Non-Speech Gestures as Cues to Support (Facilitate) Speech Sounds

- Non-speech gestures such as "blowing out a candle" can help transfer motor patterns to speech production, especially for rounded vowels like /**u**/. For example, after or while practicing blowing, encourages the client to produce the vowel /**u**/ or **moo** (as in "**moo**n"), which shares similar lip rounding and oral posture.
- Hand opens like a pop – to cue plosive sounds like /**p**/, /**b**/, etc. (e.g., "**p**o**p**")
- Hands pressed together then burst apart – cue for stop (plosive) sounds like /**p**/, /**b**/, /**t**/, /**d**/, /**k**/, /**g**/ (e.g., "**c**u**p**").
- Finger to lips – to cue lip closure for bilabials like /**m**/, /**p**/, /**b**/ (e.g., "**m**o**m**")
- Index placed vertically in front of the lips, mimicking the "shh" silence gesture – to cue long fricatives like /**ʃ**/ in "**sh**oe"
- Finger to throat – to increase awareness of voicing in voiced sounds (e.g., /**b**/ vs. /**p**/)
- "Snake" motion with hand – continuous movement to cue /**s**/ (e.g., "**s**un")
- Finger to nose – cue for nasal consonants like /**m**/, /**n**/ (e.g., "no")
- Fingers "walking" backward – cue for back-of-mouth sounds like /**k**/ or /**g**/ (e.g., "**g**o")
- Fingers "walking" forward – cue for front-of-mouth sounds like /**t**/, /**d**/ (e.g., "**t**o**p**")
- Hands spreading wide – to model wide oral opening for low vowels (e.g., /**ɑ**/ in "sock")

2. Consider Manner of Articulation When Choosing Target Sounds

- Stops (/**p**/, /**t**/, /**k**/) are generally easier to produce than fricatives (/**s**/, /**f**/), and fricatives are easier than affricates (/**ʧ**/, /**ʤ**/), especially when respiratory support is reduced.
- Nasals (/**m**/, /**n**/) tend to be easier than fricatives and affricates if palatal closure is weak or inconsistent.

3. Target Easier Sounds Based on Palatal Closure and Word Shape, Not Isolated Sounds

- When palatal closure is weak, nasals, vowels, and glides are easier to produce than consonants requiring intraoral pressure. However, these target sounds should be practiced **within syllables and words**, not just in isolation, because motor planning depends on co-articulation and word shape. Articulation drills should emphasize **movement and syllable transitions**, not fixed tongue or lip positions.

4. Use Phonetic Context to Facilitate or Challenge Articulation

- The sounds surrounding a target (phonetic environment) influence accuracy through co-articulation effects. For example, alveolar consonants (/**t**/, /**d**/, /**n**/) are easier next to high vowels like /**i**/ ("t**ea**") because the tongue is already raised forward. Conversely, jaw-open vowels (/**ɑ**/) may retract the tongue, making alveolar sounds harder.
- Always consider phonetic context and word shape when selecting stimuli.

5. Be Aware That Syntactic Complexity Impacts Motor Performance

- Speech production is both motor and cognitive. Increased linguistic complexity (longer or more complex sentences) requires more cognitive resources for word retrieval and syntax, which can detract from motor planning. Clients with CAS or AOS might say a word correctly in isolation but struggle in sentences due to sequencing demands. *This is why the approach begins not with isolated sounds but with target sounds in monosyllabic words, then gradually increases complexity through disyllabic and polysyllabic words, increasing linguistic load as motor control improves.*

6. Address Morphological Complexity Gradually

- Morphologically complex words (e.g., 'jumping' or 'reopening') contain more morphemes, often resulting in additional syllables and phonemes, which increases motor planning demands. Introduce morphological elements step by step—from simple root words to words with prefixes or suffixes—to gradually build motor planning skills.

7. **Use Minimal Contrast Pairs to Reduce Motor Demands Early On**

   - Begin with *minimal* or near-minimal pairs that differ by just one *phonological feature* (e.g., '**p**ea' vs. '**b**ee') to support early motor planning. Then progress to pairs like '**t**op' vs. '**c**op,' which differ by both place and voicing. Once consistent control is established, introduce *maximal oppositions*—word pairs that differ by *multiple phonological features* (e.g., **sh**ip" vs. "**l**ip,' differing in place, manner, and voicing)—to further challenge and expand the child's motor speech repertoire.

8. **Use Words Differing by One Sound to Build Complexity**

   - For example, target /st/ cluster starting from the word “top” by adding /s/ “stop” to help transition from monosyllabic words without clusters to those with consonant clusters, gradually increasing motor complexity.

9. **Incorporate Right-Hand Movements to Support Speech Motor Planning**

   - Moving the right hand during speech practice may improve articulation because, in most individuals, the left hemisphere—which predominantly controls language functions—also controls the right hand. Crucially, brain areas such as Broca’s area and the premotor cortex are involved in both speech motor planning and hand movement coordination. Engaging the right hand during speech exercises activates these overlapping regions simultaneously, strengthening neural connections and supporting more precise motor planning and production. Sensorimotor integration theories suggest that coupling speech with hand movements facilitates motor learning by engaging shared neural circuits, which may enhance articulation skills.
     Note: Broca’s area is usually in the left hemisphere for ~95% of right-handed and ~70% of left-handed people. For others, brain organization varies.

10. **Encourage Mental Practice Outside Therapy Sessions**

    - Ask clients to imagine producing target sounds before sleep or during quiet times. Although this mental rehearsal does not involve physically producing speech, it activates many of the same brain regions responsible for motor planning, such as the premotor cortex and supplementary motor area. By mentally simulating the movements required for speech, these motor planning areas are engaged and reinforced without actual execution. This activation helps strengthen neural connections involved in planning and coordinating speech movements, supporting motor learning and improving speech production over time. Combining mental rehearsal with visualization of articulator movements—such as imagining the tongue, lips, or jaw moving to produce the sound—can further engage sensory and motor regions, enhancing the precision and effectiveness of the motor plan. Mental rehearsal, paired with vivid articulatory imagery, leverages the brain’s ability to simulate and refine speech actions internally, making it a valuable adjunct to active speech practice, especially when physical practice is limited

11. **Prefer Meaningful Stimuli Over Nonsense Syllables for CAS/AOS**

    - Meaningful words and phrases are more motivating and effective for motor planning practice in CAS/AOS than nonsense syllables, which are more common in articulation disorder therapy.

12. **Use Compensatory Strategies for Motor Limitations**

    - When a specific articulator (like the tongue tip) has limited control, encourage alternative strategies that enable clearer speech production. For example, for the /s/ sound, if tongue tip control is weak, the speaker can produce /s/ with the tongue tip down—sometimes even touching the lower front teeth—while raising the tongue blade to create the necessary airflow and sound clarity. Being creative and flexible in identifying such compensations can help improve clarity across multiple speech sounds, not just one. Tailoring compensatory approaches to each individual's motor abilities supports functional communication despite underlying limitations

13. **Use Over-Enunciation and Exaggerated Mouth Movements**

- Exaggerated movements enhance sensory feedback by increasing visual cues, tactile sensations, and proprioceptive input. This heightened feedback helps clients better see and feel the precise articulatory targets they need to achieve, which is critical for refining their speech movements. Such amplified sensory information supports motor learning by reinforcing accurate motor plans and correcting errors. This approach is especially beneficial for individuals with poor internal models of movement—common in conditions like Childhood Apraxia of Speech (CAS) and Apraxia of Speech (AOS)—where the brain's ability to predict and monitor speech movements is impaired

14. **Slow Speech Rate to Support Motor Planning and Accuracy**

- Slower, controlled speech gives more time for planning and executing movements and allows focus on accurate transitions between sounds and syllables, which are often impaired in CAS and AOS.

15. **Base Therapy on Phonetic Syllables, Not Written Syllables**

- In Childhood Apraxia of Speech (CAS) and Apraxia of Speech (AOS), syllables are fundamental motor units that are planned and executed in real time based on how speech sounds are physically produced, rather than how they are written or divided by orthographic or morphological rules. This distinction is important because orthographic syllabification (how words are split in writing) often does not align with actual articulatory patterns in spoken language. For example, written syllable breaks may separate consonants that function as onsets in natural speech, causing confusion when used in therapy. Therefore, speech therapy should focus on phonetic syllable structures—such as consonant-vowel (CV) or consonant-vowel-consonant (CVC)—which reflect the real motor demands of producing sounds. This approach simplifies motor planning by targeting syllable shapes as they naturally occur in speech, making it especially effective for clients with CAS/AOS who struggle with sequencing and timing of speech movements. Using phonetic rather than orthographic syllabification helps therapists create clearer, more accurate, and developmentally appropriate targets for speech motor learning.
  Note: For more detail, see my article "Why I Chose Phonetic Syllabification for Speech Therapy."

16. **Adjust Targets for Clients with Atypical Sound Acquisition Patterns**

- Some clients produce later-acquired sounds like /s/ or /l/ before earlier-developing sounds such as /p/ or /n/. This unexpected pattern does not always reflect true underlying motor ability but may instead relate to differences in sensorimotor access, compensatory strategies, or individual variations in how the speech system is organized and recruited. In these cases, it's essential to look beyond typical developmental norms and consider how accurately and consistently each sound is produced in the child's current speech system. A sound that is traditionally labeled as "complex" may, in practice, be more stable and accessible for a given client. For example, if /s/ is consistently produced clearly and with minimal effort, it can be treated as an "easy" sound for therapy purposes—even if it is typically considered a late-acquired, high-complexity sound. This individualized, performance-based approach allows for more effective and tailored treatment planning.For more detail and examples, see my article Oral Motor Complexity Score.

17. **Focus on Underlying Motor Planning, Not Just Articulation of Individual Sounds**

- In motor speech disorders like Childhood Apraxia of Speech (CAS) and Apraxia of Speech (AOS), progress hinges on improving the child's overall motor planning abilities—not simply achieving correct production of individual speech sounds. These disorders involve difficulty in programming and sequencing the movements needed for fluent, accurate speech, which means that even sounds a child can produce correctly in isolation may break down in longer utterances or varied contexts. If therapy focuses only on isolated phonemes without systematically addressing the underlying motor planning deficit, progress will often be slow, inconsistent, or plateau prematurely. Targeting the root cause—motor planning and the smooth transition between speech movements—is essential for meaningful, lasting improvement in functional communication.