

# Overview PROMPT

Presented by

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M.A. S-LP

CASLPO Reg., P.C.



# Learning Objectives

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1. Identify movement patterns and treatment priorities as they apply to the System Analysis Observation (SAO) and Motor Speech Hierarchy (MSH)
2. List and explain levels of PROMPT, mass/distributed practice, reciprocal turn-taking and repetitive predictable play routines
3. Describe what PROMPT assessment and treatment look like.
4. Understand how evidence-based PROMPT research is linked to clinical practice

# About me.....

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- Wayne State Spring 1993
- John McGivney Children Centre
- Private Practice
- Instructor PROMPT Institute (2008)
- North America and Europe
- RCT Research

# PROMPT stands for

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**P**rompts for  
**R**estructuring  
**O**ral  
**M**uscular  
**P**honetic  
**T**argets

# The PROMPT Institute

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- The PROMPT Institute Vision is to *have PROMPT readily available to every person, in every country, who has potential to benefit from it.*
- *Deborah Hayden Founder*

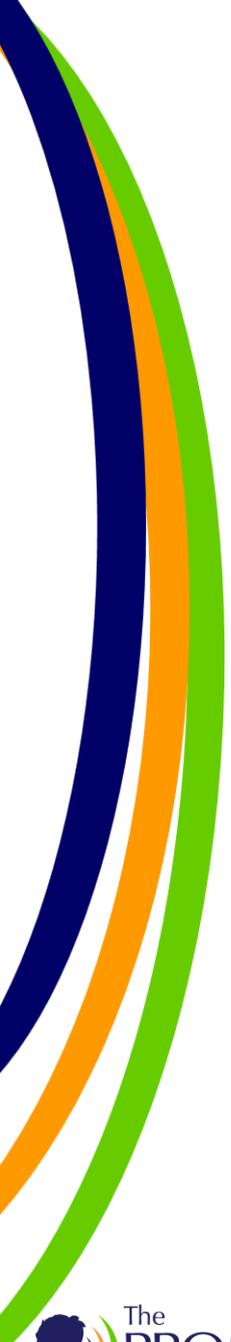
# PROMPT is used with Children and Adults with

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- Phonological delays
- Developmental delays
- Dysarthria
- Apraxia of Speech
- Motor Speech Disorders
- Hearing impairment
- Autism Spectrum Disorders
- Fluency disorders
- Difficulty acquiring foreign language sounds systems

# Introduction to PROMPT

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# Why a shift?

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- Tried everything available to SLP's
- Home, part time
- Vowel quadrant and Speech Science text

# Then I started seeing this.....

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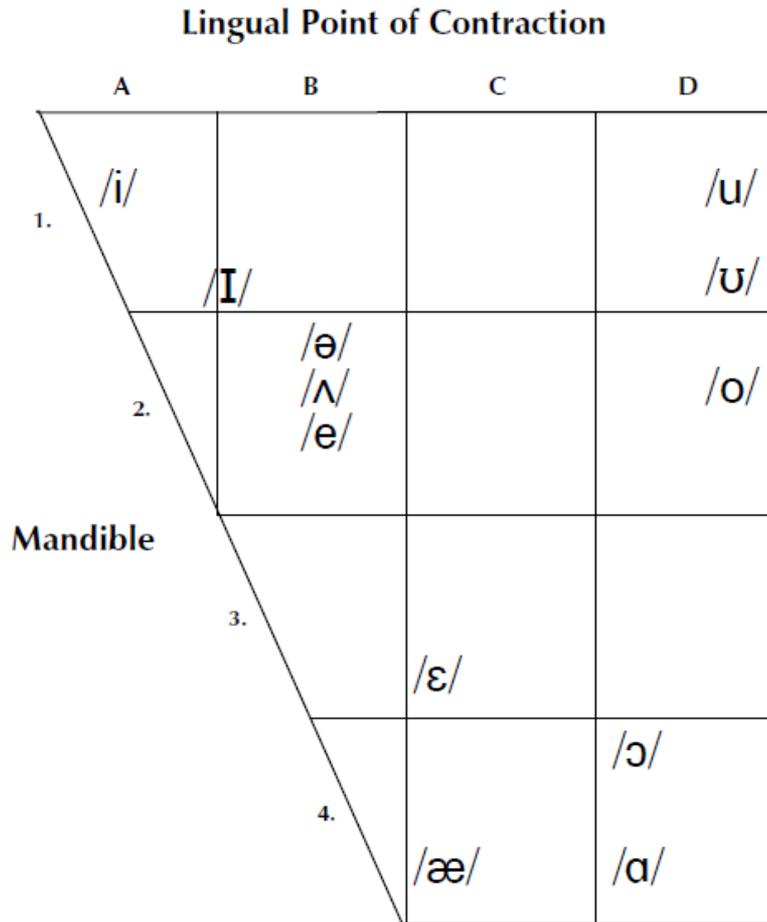
- video

# Vowel Quadrant

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- I started to realize that the vowel mattered for consonant productions...

# Vowel Chart



# My PROMPT Journey

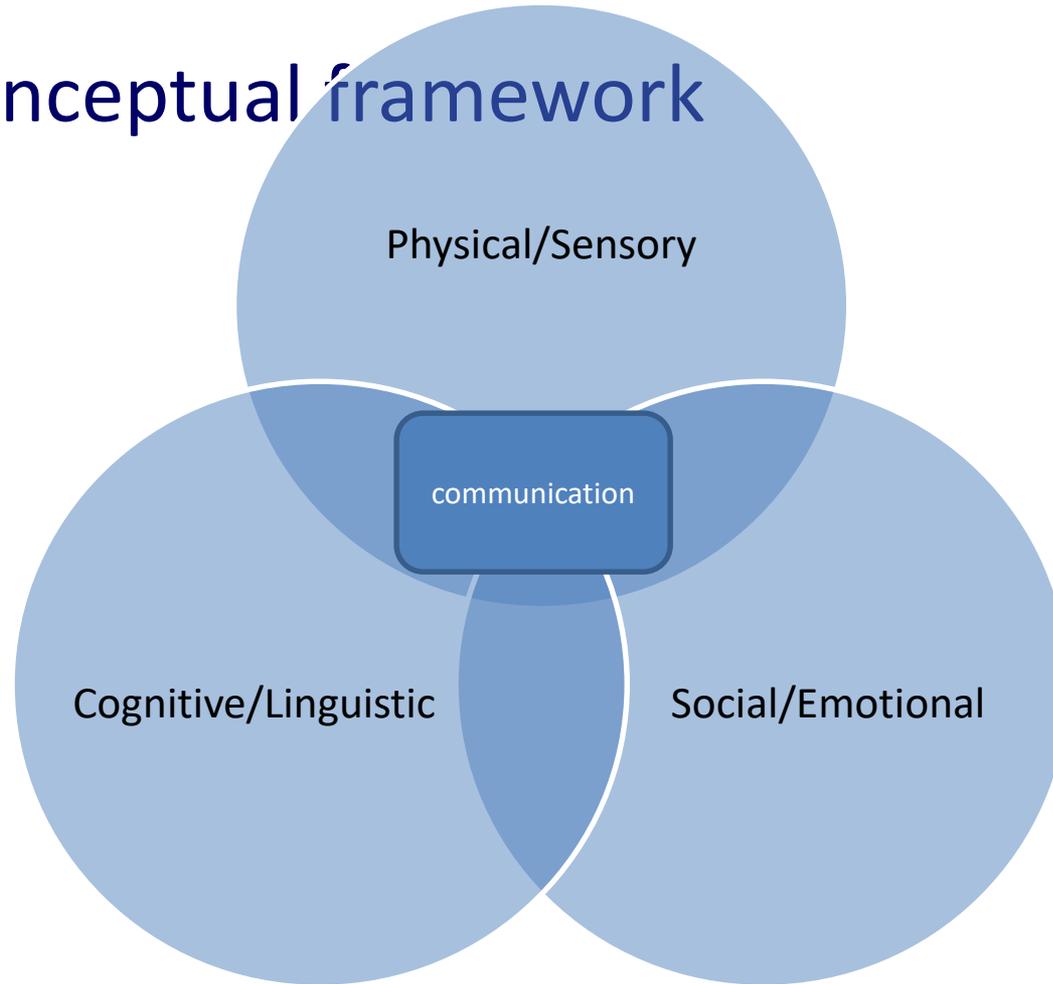
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- Introduction to PROMPT Technique 2001
- Bridging PROMPT 2003
- PROMPT Certification 2005
- Instructor Training 2008
- PROMPT Research 2013

# How Does a PROMPT Clinician view a Client?

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- Conceptual framework



# Weak domains.....populations

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- **Physical sensory-**

Cerebral Palsy, Down Syndrome, cleft palate/cranial facial, tone issues, Autism, Hearing/Visual Impairment

- **Cognitive linguistic-**

learning disability, cognitive impairment, Autism, Down Syndrome

- **Social emotional-**

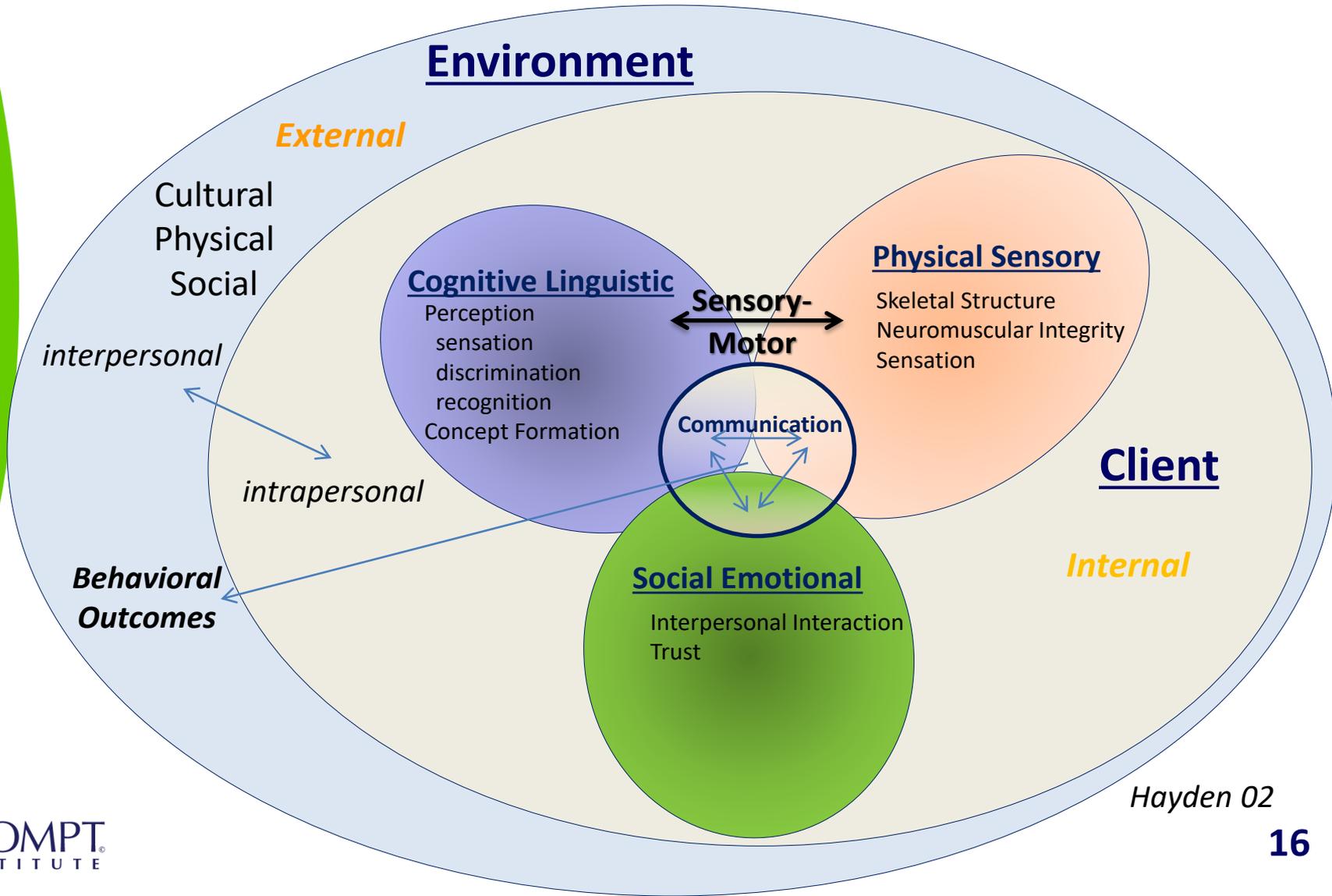
Autism, social pragmatic language disorder, mental health, shy

# PROMPT is.....

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- **A Philosophy**
  - \* *tenets*
- **An Approach**
  - \* *organizing principles of assessment*
- **A System**
  - \* *development of intervention plans, communication focus, goals, objectives, activities etc.*
- **A Technique**
  - \* *purpose and use of PROMPT technique*

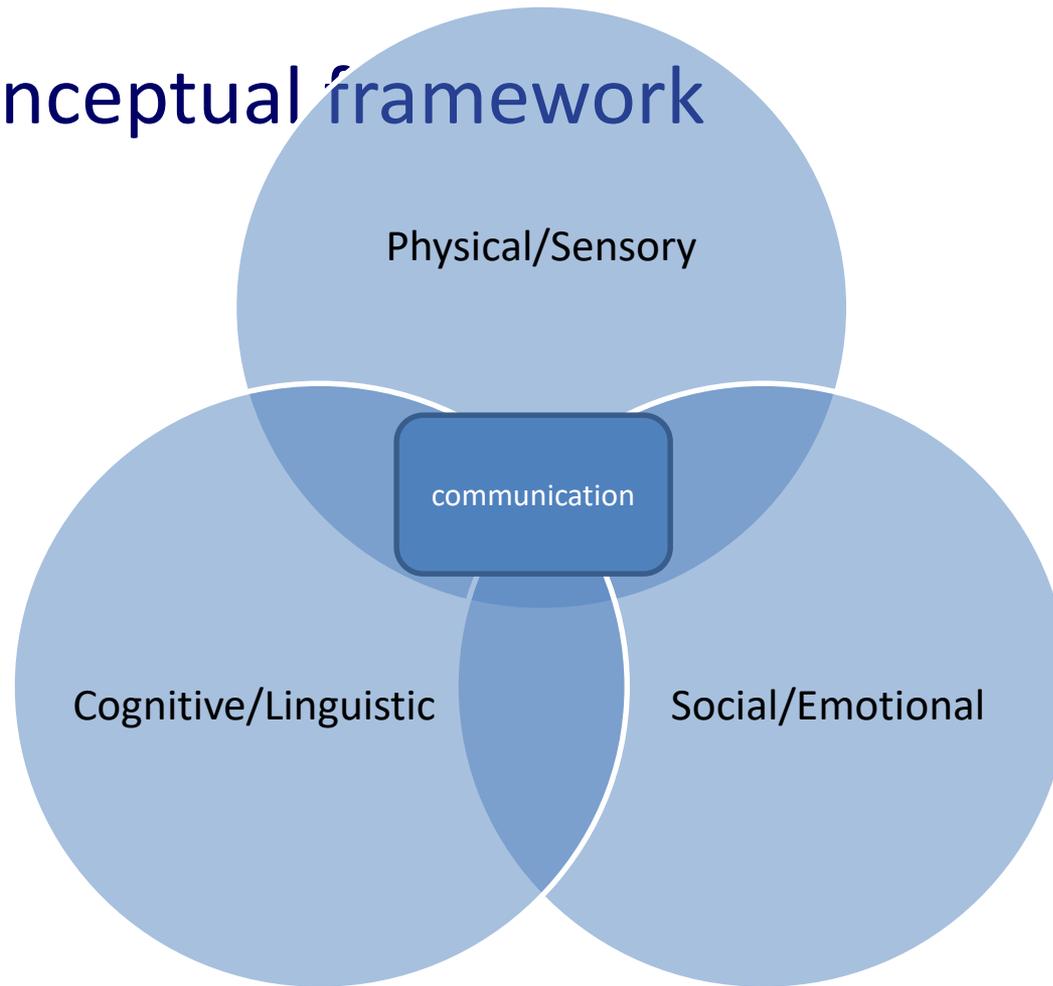
# PROMPT Philosophy



# How Does a PROMPT Clinician view a Client?

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- Conceptual framework



# Approach

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- Stresses the need to thoroughly evaluate all areas of client function, determine the environments in which communication is the “most critical.”
- Utilize a wide variety of appraisal/evaluation procedures and or approaches.
- Evaluate the entire neuromotor system as well as cognitive and psycho-social domains.
- Utilize input from several other professionals.

# Motor Speech Disorder

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- Dysarthria, apraxia, CAS,
- Motor Speech Disorder-NOS
- Phonological processes, traditional articulation, apraxia programs
  
- What is the problem?
- PROMPT journey has taken me to where you can never take out motor

# Traditional Norms

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- What's the problem?
- GFTA listening but not looking
- Why is it a problem?-single word affects prosody
- Rate, timing, transition and co-articulation

# Principles of Motor Learning(Maas et al. 2008)

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- Pre-practice
- Inspire motivation
- Conditions of practice
- Awareness of goal
- Mass vs. Distributed Practice
- Constant vs. Variable Practice
- Blocked vs. Random Practice

# Motor Learning Continued

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- Feedback geared toward motor movements
- Knowledge of Results vs. Knowledge of Performance
- Additional Considerations:
  - Auditory
  - Visual
  - Tactile
  - Proprioceptive input

# What does the research tell us?

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- EBP
- Type of research we are doing in our field
- Why are RCT so difficult to do?
- Why not more comparative studies?

# Research Kiddo number 1- Pre-Treatment

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video

# RCT Subject 1-Post

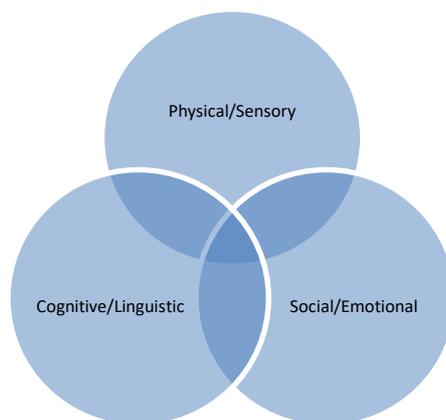
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- video

# PROMPT is a System

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- In typically developing systems, speech and language develop together
- C/L, P/S, S/E domains all work together and must all be addressed when working to assist communication development



If someone tells you PROMPT is simply a  
touch cue method.....

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You are doing it wrong!

PROMPT uses proprioceptive and tactile  
methods in whole words and sentences  
during functional and meaningful  
interactions.

# Shifts for SLP's

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- Holistic – addressing all of the domains (physical-sensory, cognitive-linguistic, social-emotional)
- Inclusive – bringing caregivers/families into the treatment process
- Motor rather than strictly auditory or developmental model
- Considers phonemes to be multi-dimensional that need multiple levels of refined motor control and timing

# Shifts for SLP's

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- Emphasis on vowels and diphthongs
- “Speech through speech”, no oral-motor
- Language based approach (no articulation drills and functional vocabulary)
- Proximity to client and tactile cueing
- New motor skills for SLPs
- All treatment is functional and interactive

# Including parents in treatment

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- Insert Tyrell home program

# PROMPT experimental data stacked on the evidence pyramid

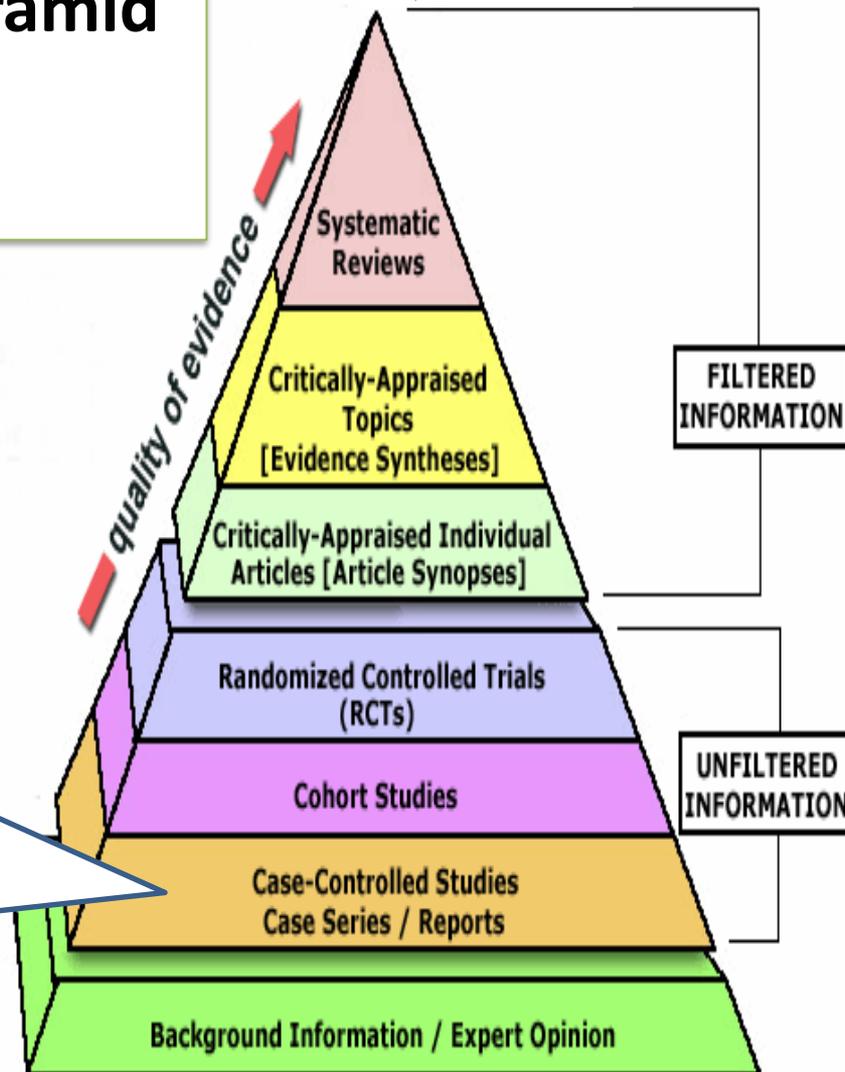
Circa: 2012

Grigos et al., 2010-SSD

Rogers et al., 2006 – Autism

Bose et al. 2001- Adult apraxia

Freed et al., 1997- Adult apraxia



# PROMPT Research

<http://promptinstitute.com/index.php?page=research-library>

- Research to support EBP
- Began with Adults-Apraxia and Aphasia
- Pediatric population CAS, Motor Speech disorders-NOS, cerebral palsy, autism, phonology
- Currently Randomized Control Trial Study data just in for analysis by a third party.....stay tuned!

# PROMPT: Neuroscience

## Cortical changes in children receiving PROMPT for motor speech disorders

**Research Question 1.** Are there differences in cortical thickness correlates between children with MSD and typically developing children (controls)?

**Research Question 2.** Are there changes in cortical thickness following PROMPT treatment?

### Participants:

**14 children with MSD** (mean 4.5 yrs; SD 0.8) (no Dysarthria or CAS diagnosis)

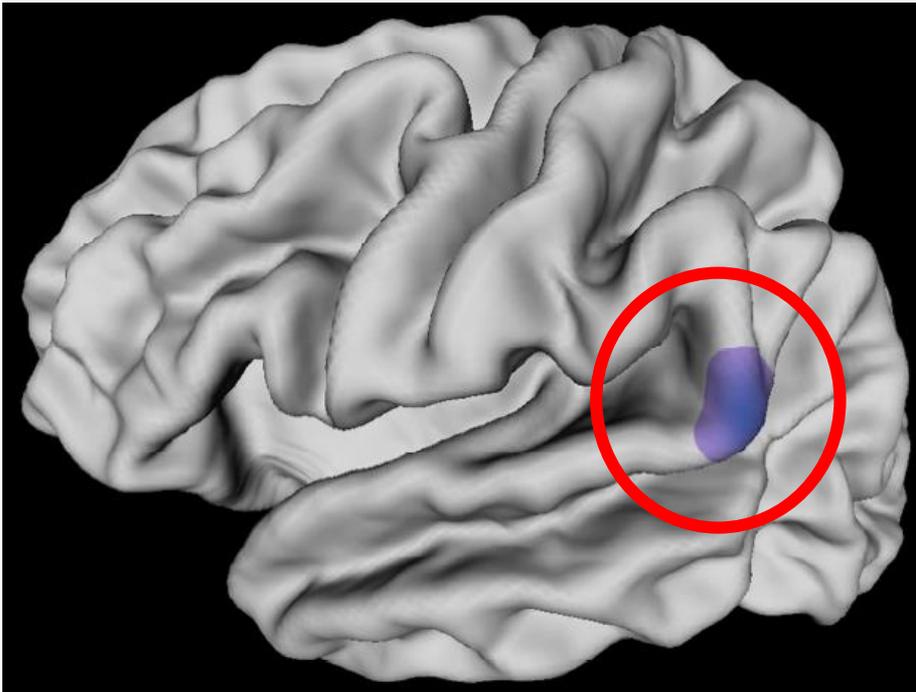
- Moderate to severe speech difficulties (on Artic/phonology)
- Signs of motor speech involvement (VMPAC-FOC/SEQ)

**14 Typically Developing children** (Controls; Mean 4.1 yrs; SD 0.7)

**Methods:** 8-weeks PROMPT (16 sessions x 45 min); **MRI** scans between groups & within groups (pre-post)

# PROMPT: Neuroscience

## Cortical changes in children receiving PROMPT for motor speech disorders



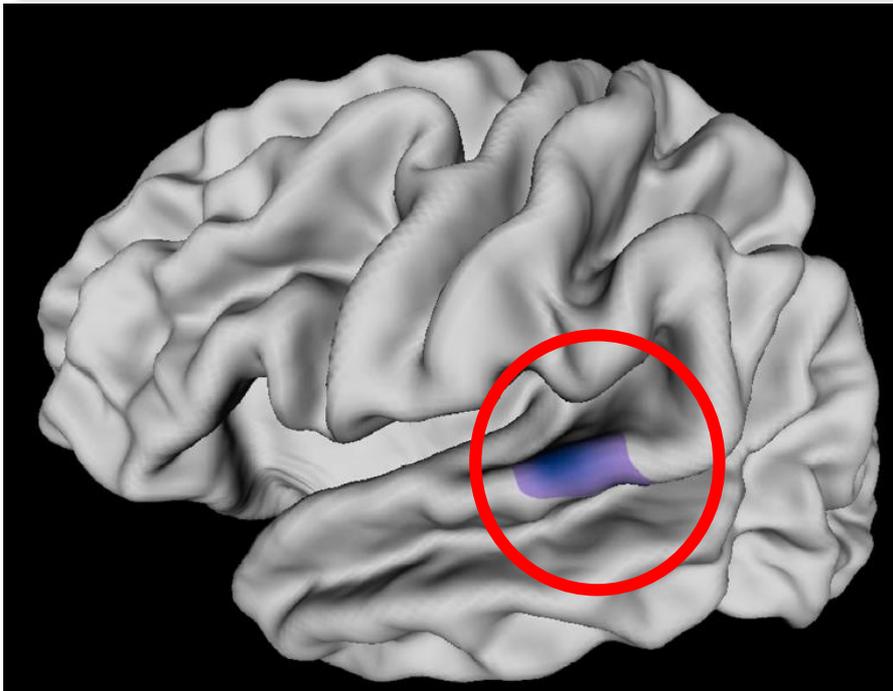
**Left Posterior SupraMarginal Gyrus:**  
**Significantly** ( $p < 0.05$ ) thicker cortex in MSD than Controls.

### What does a thicker Lt SupraMarginal Gyrus mean in MSD?

- May indicate CNS immaturity or altered development (*as its supposed to prune back in childhood*).
- **SMG: Important for multi-sensory integration.** Compensatory thickening due to inefficient organization (pruning not occurred)? or Over use in MSD children?
- **Bilateral SMG injuries** = severe speech planning deficits = stereotypical CAS. **Unilateral LT SMG** (present study) = milder, some CAS features but not enough for CAS diagnosis = MSD-NOS?

# PROMPT: Neuroscience

## Cortical changes in children receiving PROMPT for motor speech disorders



**Left Post Superior Temporal Gyrus**  
(**Wernicke's area**): **Significant** ( $p < 0.05$ )  
thinning Pre-Post PROMPT tx in MSD

### *What does thinning of Wernicke's area following (Pre-Post) PROMPT tx Mean?*

- **Wernicke's area**: Role in the formation of "speech sound representation".
- PROMPT with TKP inputs may allow for formation of more accurate **speech sound representation**.
- Which in turn allows the development of accurate & **stable motor programs** that can be **retrieved and sequenced** efficiently.

# PROMPT: Neuroscience

## Cortical changes in children receiving PROMPT for motor speech disorders

### *Findings reveal:*

- A subtle cortical morphological atypicality associated with motor speech deficits in children. (*Thicker SMG*)
- PROMPT Tx: Capable of rapid & robust experience-dependent structural plasticity in children`s brains.
- PROMPT intervention promotes development of sensory-motor systems controlling speech production, associated with thinning and possible maturation of Wernicke`s area (*possibly improving speech sound representations*).
- One possible mechanism and neural target for therapeutic action of PROMPT identified.

*Recent References: 2012-1013*

*Square, P. A., Namasivayam, A. K., Bose, A., Goshuluk, D., & Hayden, D. (2013, Submitted). Multi-Sensory Treatment for Children with Developmental Motor Speech Disorders. Developmental Neurorehabilitation.*

Namasivayam, A.K., Pukkonen, M., Goshuluk, D., Yu, V.y., Kadis, D. S., Kroll, R., Pang, E.W., & De Nil, L. F. (2013, accepted). Changes in speech intelligibility following motor speech treatment in children. *Journal of Communication Disorders.*

Yu, Kadis, Namasivayam, Goshuluk, Pukkonen, Kroll, De Nil, Pang. (2013, submitted). Changes in Voice Onset Time and Motor Speech Skills in Children with Motor Speech Disorders after PROMPT Therapy. *Developmental Neuropsychology.*

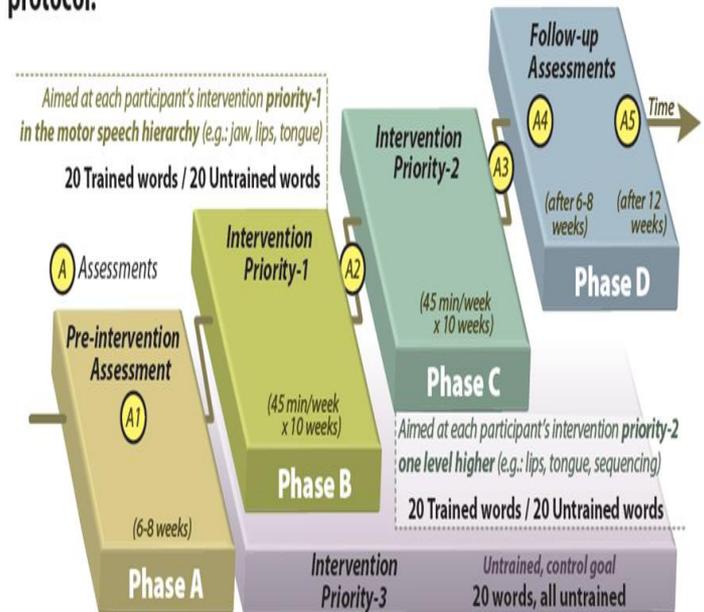
Kadis, Goshuluk, Namasivayam, Pukkonen, Kroll, De Nil, Pang, & Lerch. (2013, submitted). Cortical thickness in children receiving intensive therapy for motor speech disorders. *Brain Topography.*

## Neurophysiological mechanisms: KINEMATICS

- An A1BCA2 single subject research design.
- A = baseline; B = first intervention priority ; C = one level higher on MSH.
- The speech probes were analysed for motor-speech movement parameters and perceptual accuracy.
- Statistically significant improvements in movement patterns were observed only when they were targeted in the intervention.

**RESEARCH DESIGN:** A single subject, multiple-baseline-across-participants study, with 4 Phases (A, B, C and D).

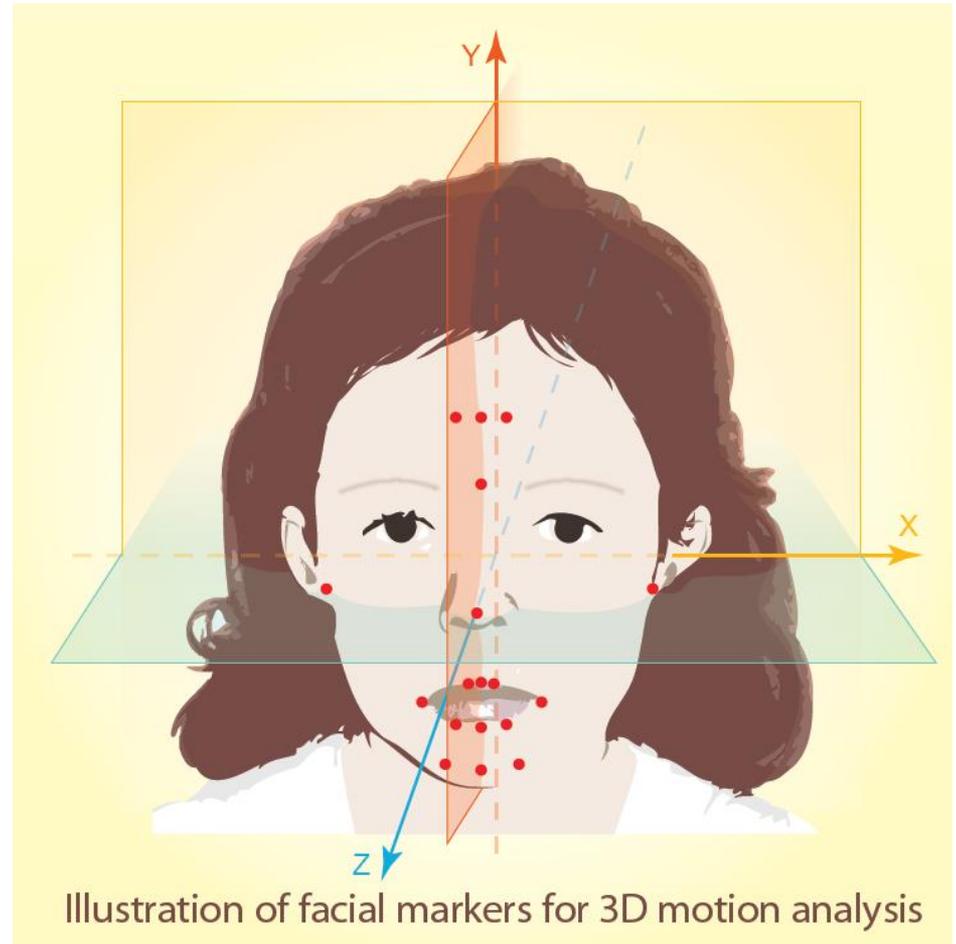
Five word-sets were generated for each child, based on their treatment protocol.



## Neurophysiological mechanisms: KINEMATICS

### •Kinematics:

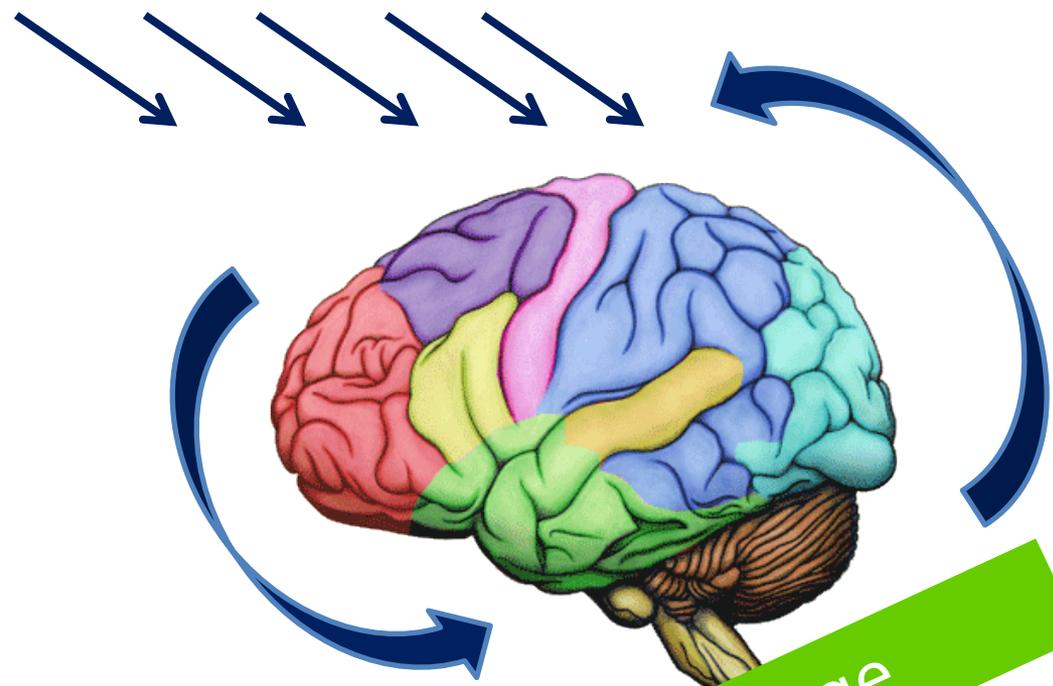
Systematic changes in mandibular and labiofacial sub-systems result in improved speech intelligibility.



- 
- Ward, R Leitao, M & Strauss, G (2009)  
The Effectiveness of PROMPT Therapy for  
Children with Moderate to Severe Speech  
Sound disorders with Cerebral Palsy.  
Developmental Medicine and Child  
Neurology (2009) 51. Suppl.5.:76.

# Relevance of NGST to PROMPT

Sensory Input



Change

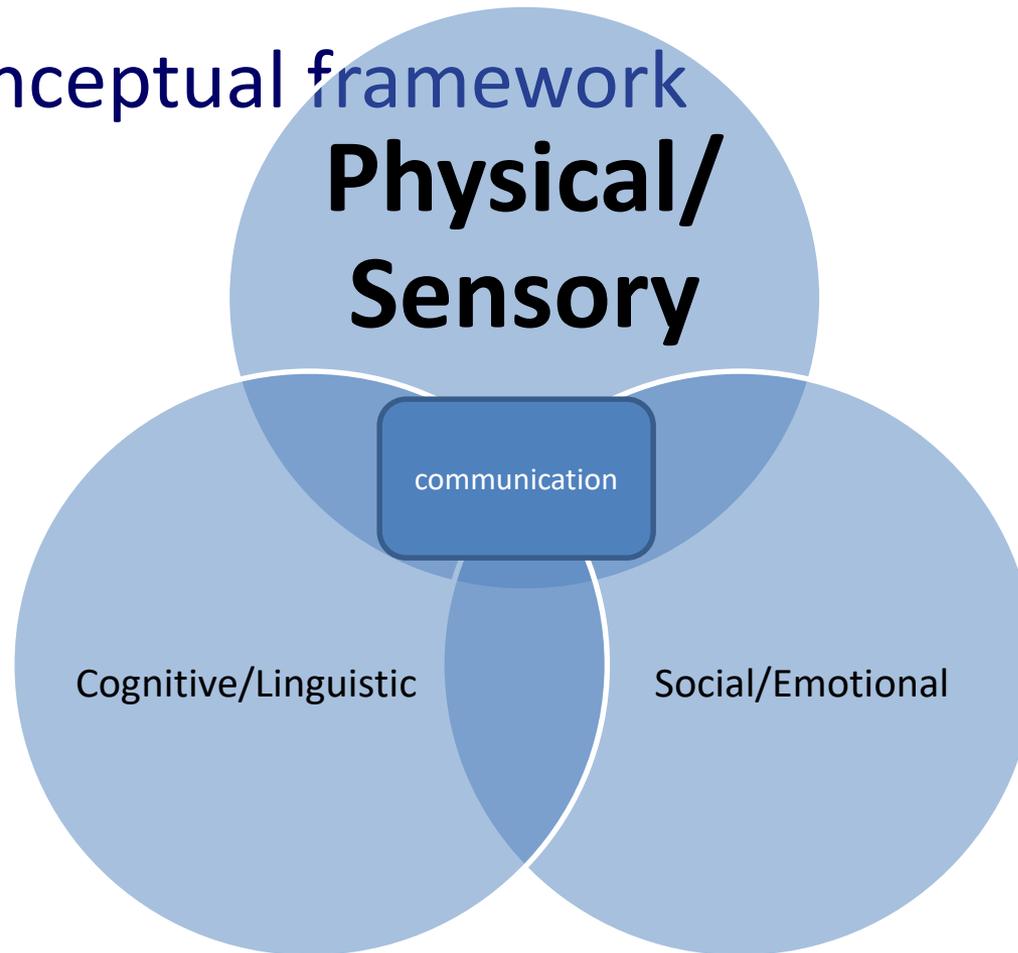
Neural Plasticity

# How Does a PROMPT Clinician view a Client?

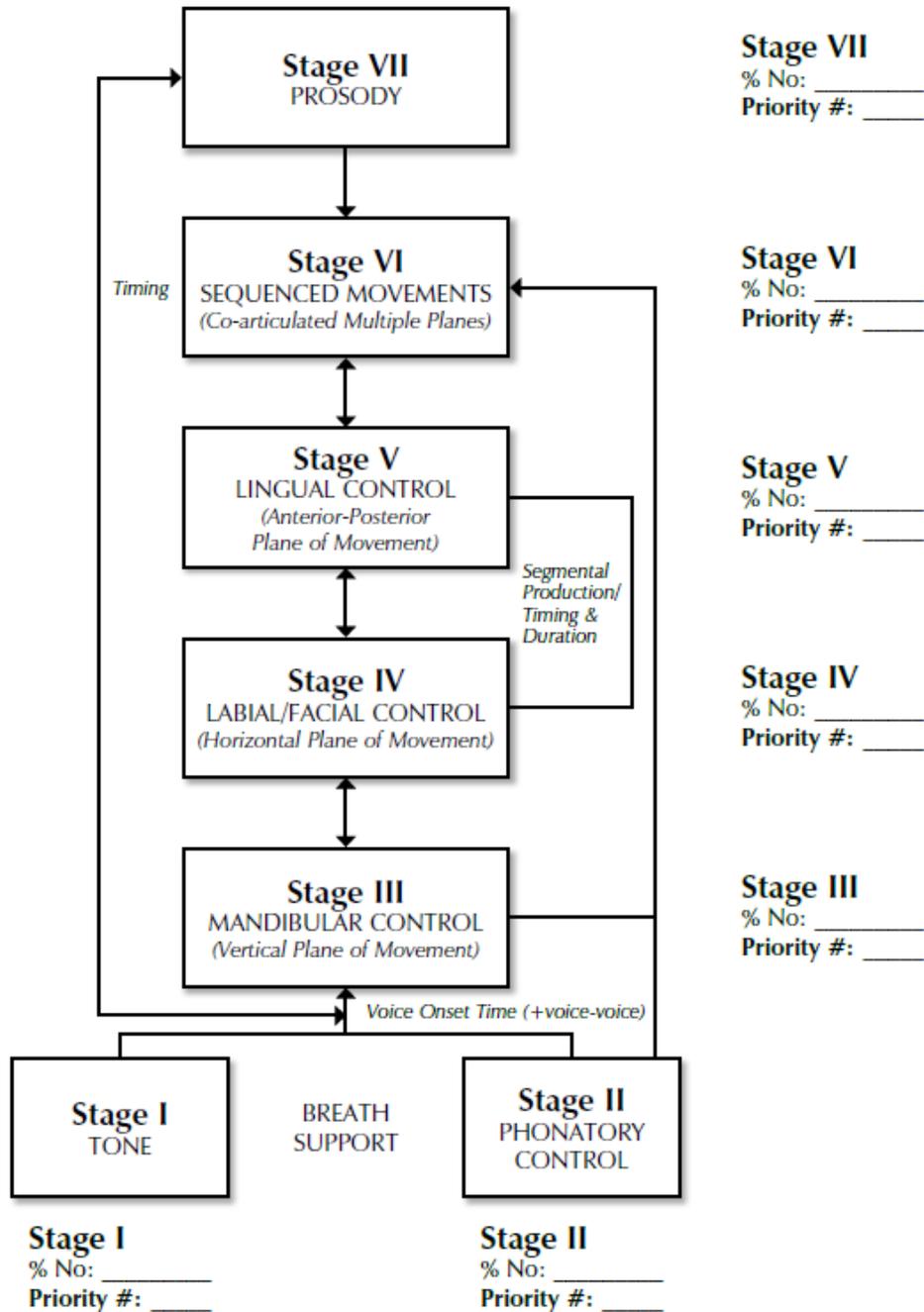
## #speechismotor

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- Conceptual framework

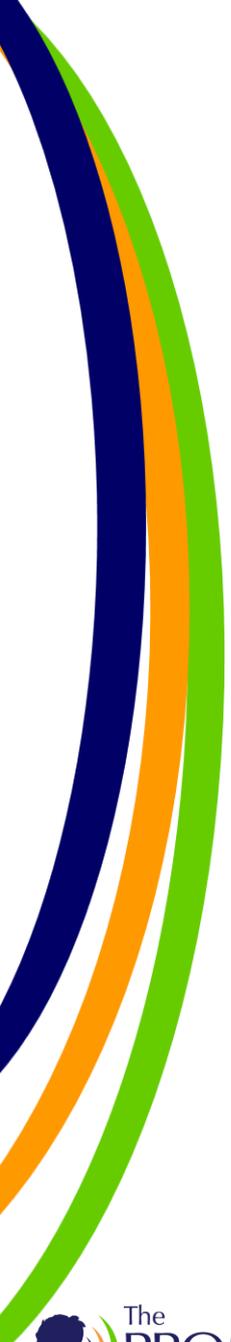


# MOTOR SPEECH HIERARCHY



# Jesse- 3-4 CP

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# Assessments

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- Write down movements

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# SYSTEM ANALYSIS OBSERVATION

## Structure, Function, Integration

(Hayden 1995, revised 2013)

### A. STRUCTURAL - Skeletal (view at rest)

1. The client's face is symmetrical in shape.
2. The mandible and maxilla are in proper alignment, height, shape and size.
3. Dental occlusion is within normal limits.  
*e.g., there is no open bite, Class II or Class III malocclusion*
4. The palatal arch and oral/dental structures are within normal limits.

YES	NO	COMMENT

### B. FUNCTION - Neuromotor (view in movement)

#### STAGE I: Tone/Neuromuscular Integrity

5. Body, trunk and facial tone are normal.  
*e.g., no hyper- or hypotonus noticeable in the body, upper chest or facial muscles.*
6. All reflexes are inhibited.  
*e.g., no observable reflexes when eating or performing verbal tasks, no tongue fasciculations*

YES	NO	COMMENT

TOTAL

	/2	
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**STAGE II: Valving and Phonation Control**  
(view in single productions only)

7. Phonation and breath support are adequate.  
*e.g., 1-3 seconds of phonation*
8. Single voiced, nasal and un-voiced phonemes, /a/, /m/, /h/, can be produced.
9. Resonance is normal  
*e.g., There is no overriding hyper/hyponasality*

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
<b>TOTAL</b>		<b>/ 3</b>	

SYSTEM ANALYSIS OBSERVATION

2

**B. FUNCTION - Neuromotor, continued (view in movement)**

**STAGE III: Mandibular Control** (from this point on, view in connected speech)

10. Jaw movement shows:
- Good range and control  
*e.g., open-close; close-open; close-open-close*
  - No lateral or anterior sliding

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
<b>TOTAL</b>		<b>/ 2</b>	

### STAGE IV: Labial-Facial Control (view in connected speech)

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
11. Lip movements show:			
• Solid contact, <i>e.g., medial one-third of labial surface</i>			
• Independent movement, <i>e.g., lips independent of jaw</i>			
• Individual movement, <i>e.g., independent lower lip movement</i>			
12. Labial-facial muscle movement shows:			
• Good retraction			
• Good protrusion			
<b>TOTAL</b>		<b>/ 5</b>	

### STAGE V: Lingual Control (view in connected speech)

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
13. Tongue body moves independently from the jaw in the following regions:			
• Anterior			
• Mid			
• Mid-back			
• Back			
<b>TOTAL</b>		<b>/ 4</b>	

**C. INTEGRATION - All systems + timing and prosody**

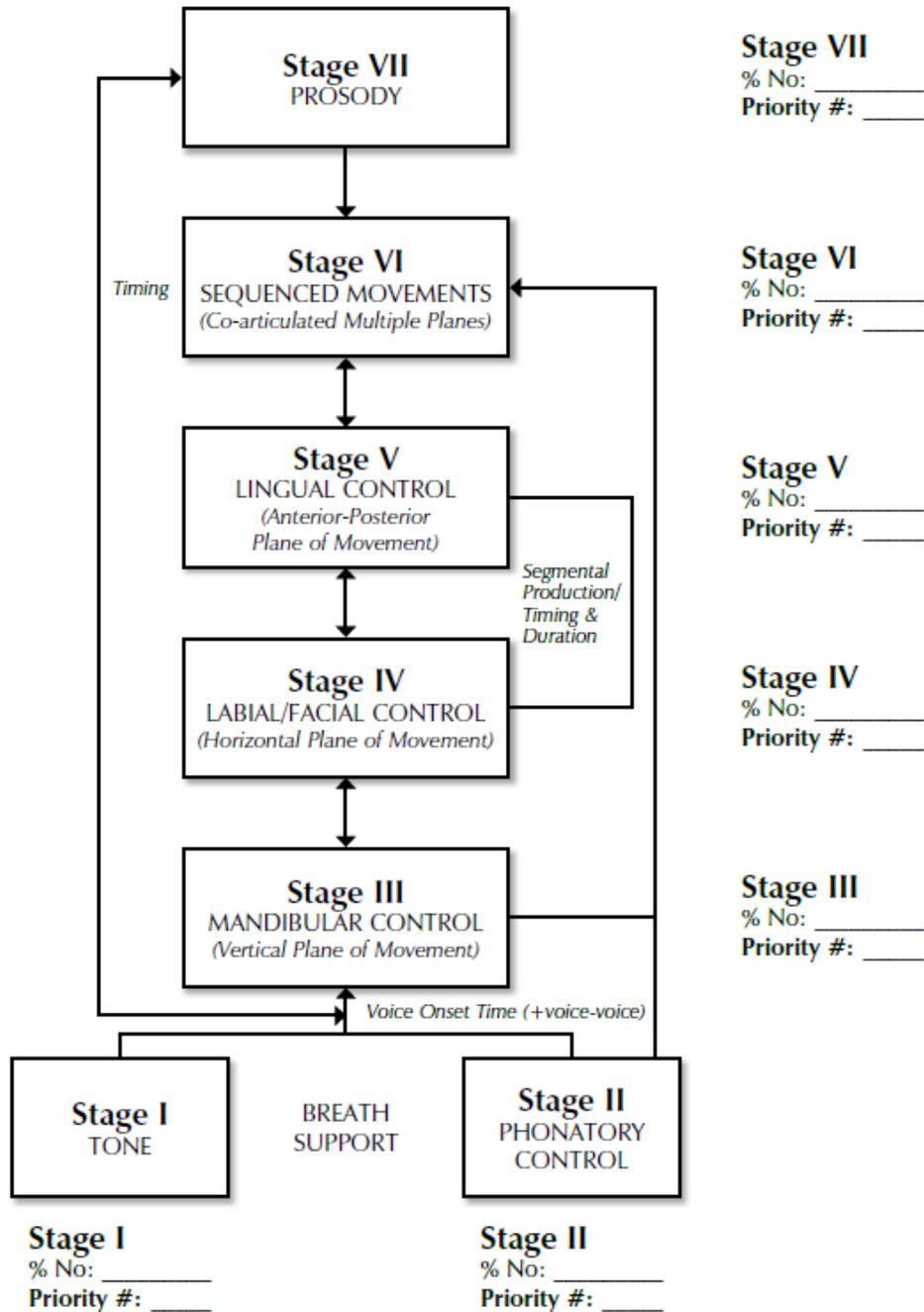
**STAGE VI: Sequenced movements across all planes**

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
14. Voicing is adequate and can be supported/ maintained through a voiced three phoneme unit. <i>e.g., bed, Dan</i>			
15. De-voicing is appropriate and can be maintained in the initial position without affecting the remainder of the segment. <i>e.g., pig, pad, toad, etc.</i>			
16. All oral musculature moves appropriately during connected speech. <i>e.g., no extraneous movements, sound additions or groping</i>			
17. Facial muscles show good combined alternate movements. <i>e.g., retraction/protrusion</i>			
18. All muscle groups evidence adequate tone, symmetrical movement, independent and coordinated functioning. <i>e.g., jaw, facial, labial, lingual</i>			
<b>TOTAL</b>		<b>/ 5</b>	

**STAGE VII: PROSODY**

	<u>YES</u>	<u>NO</u>	<u>COMMENT</u>
19. Timing for co-articulation is normal for age. <i>e.g., intonation and phrasing is marked</i>			
<b>TOTAL</b>		<b>/ 1</b>	

# MOTOR SPEECH HIERARCHY

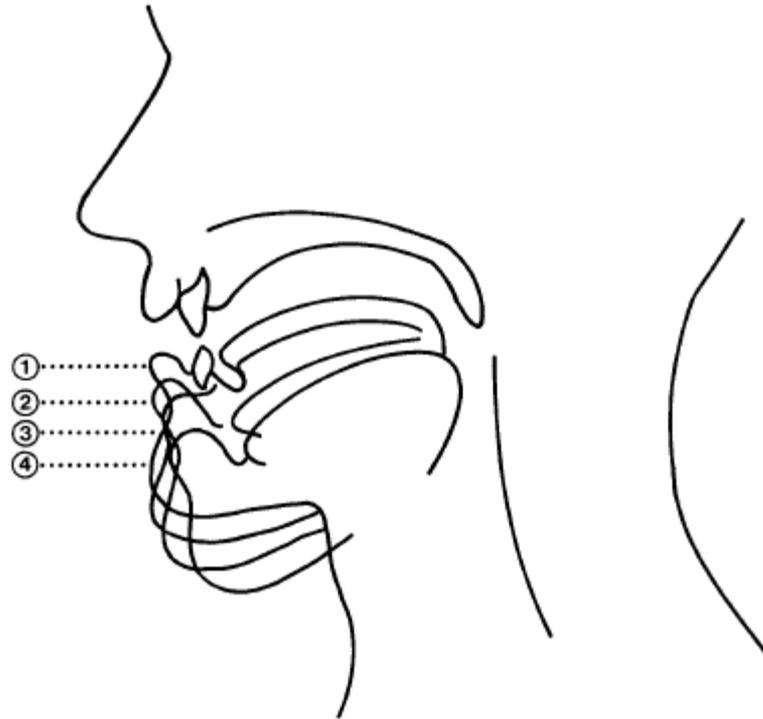


# Vowel Chart

Lingual Point of Contraction

	A	B	C	D
1.	/i/			/u/
		/ɪ/		/ʊ/
2.		/ə/ /ʌ/ /e/		/o/
Mandible				
3.			/ɛ/	
4.				/ɔ/
		/æ/		/ɑ/

# MANDIBULAR POSITIONS FOR MOTOR-PHONEME LINKS

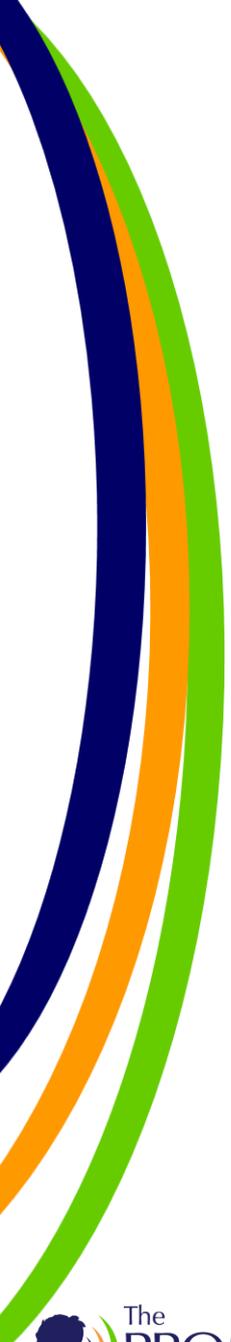


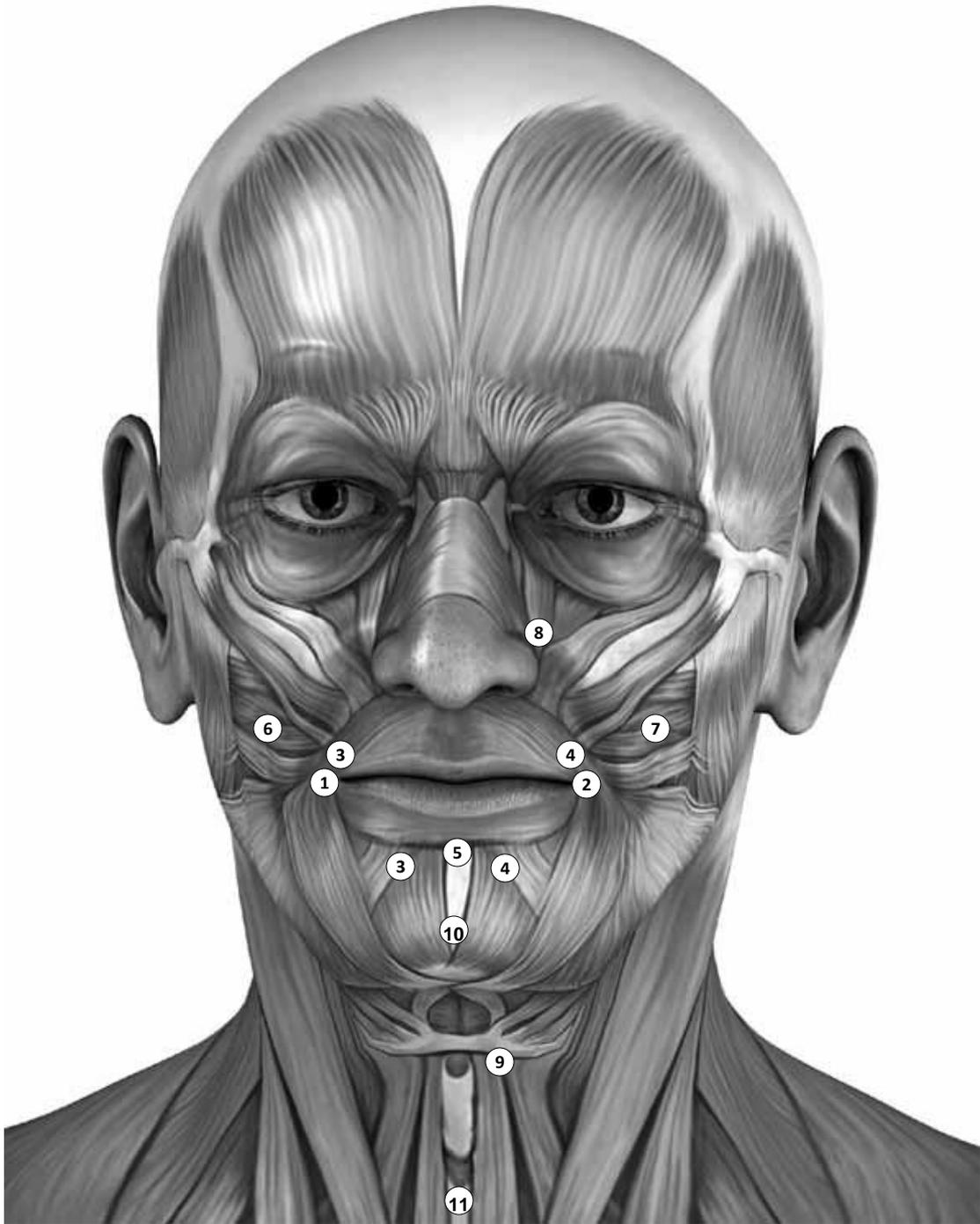
Jaw Position Changes for High to Low for Vowels

HIGH 1	(i) heed
2	(e) hate
3	(ɛ) head
LOW 4	(æ) had

# Mandible- Stage III

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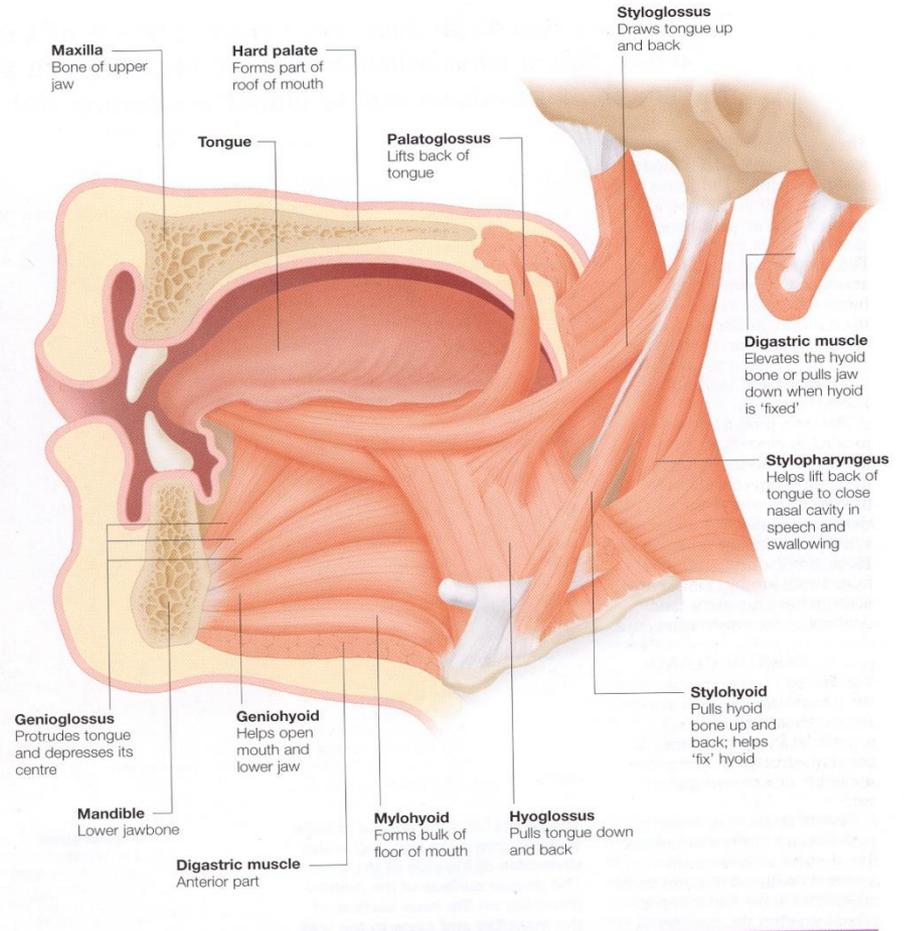
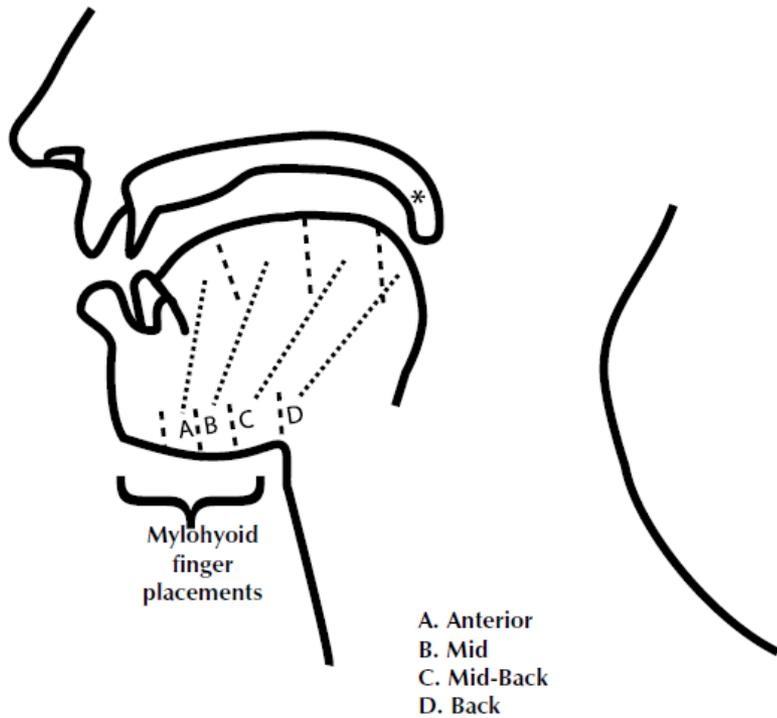


# Labial-facial Stage IV 3-10

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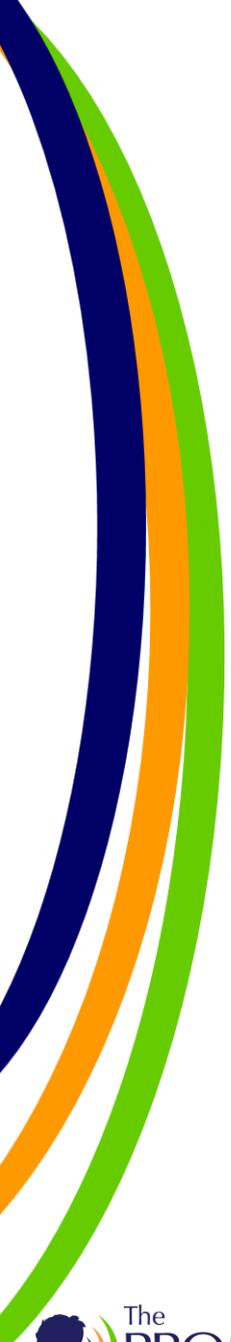
- Preston

PLACE OF CONTACT FOR TARGET POSITIONS,  
MYLOHYOID PLACEMENTS



# Lingual

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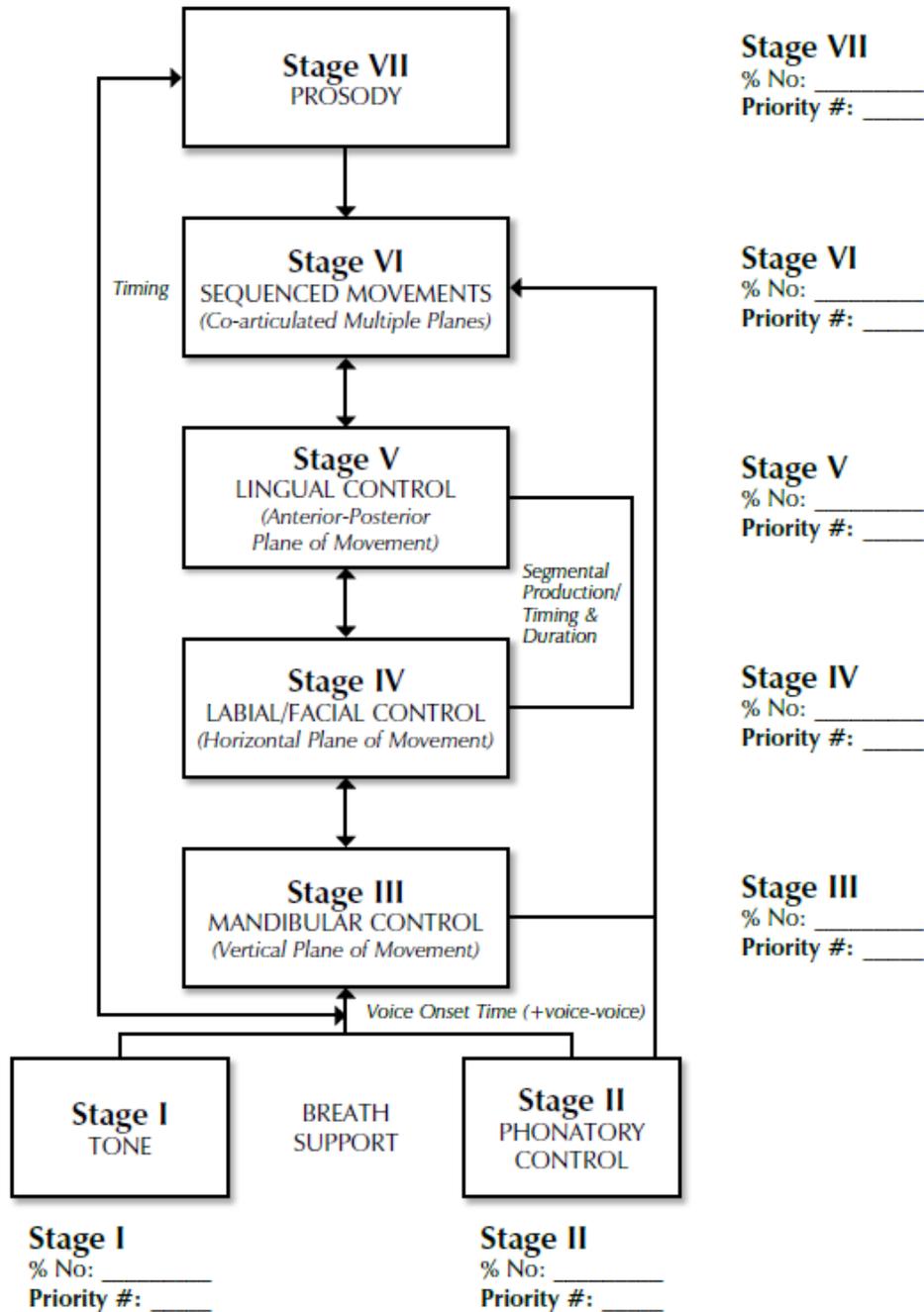
# System

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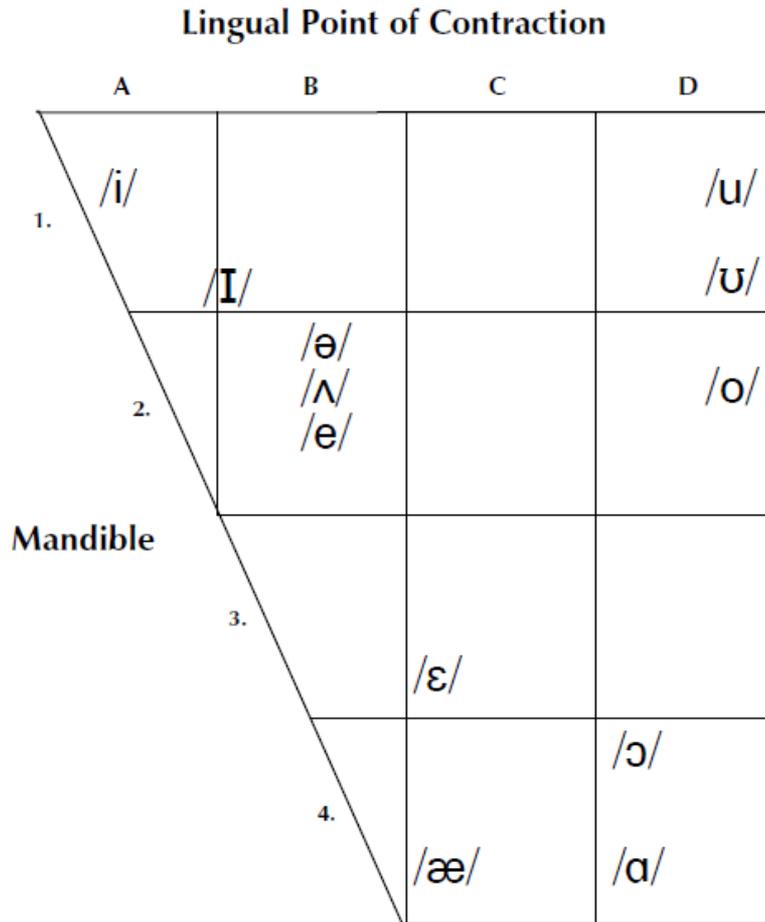
- development of intervention plans, communication focus, goals, objectives, activities etc.
- massed and distributed practice
- Interactive functional communication routines and lexicon used across communicative contexts

- 
- Video interactive routine

# MOTOR SPEECH HIERARCHY



# Vowel Chart



# Levels of PROMPT Technique

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- There are four levels of PROMPT
- Each utilized to assist in the objective you are working on

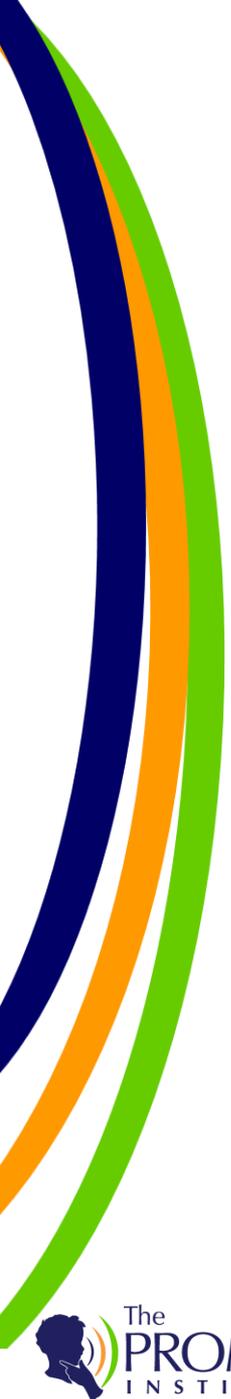
# Parameter PROMPTs

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- Provide broad stability on one plane of movement
- Vertical or horizontal
- Very supportive and stabilizing

# Parameter PROMPT

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# Surface PROMPTs

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- Most amount of information-manner of placement, timing, rate and intonation

# Surface PROMPTing

Revised Treatment Plan:

- ◆ Develop posterior tongue contractions /k/, /g/ integrated with jaw stability and grading
- ◆ Differentiate posterior /k/, /g/ from anterior /t/, /d/, /n/ tongue contractions

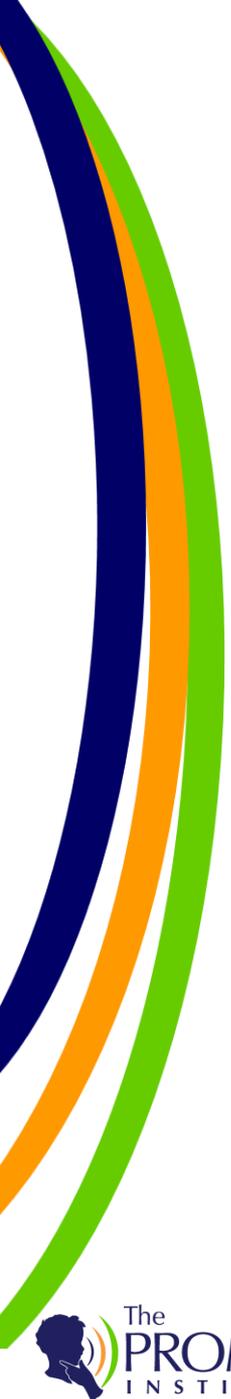
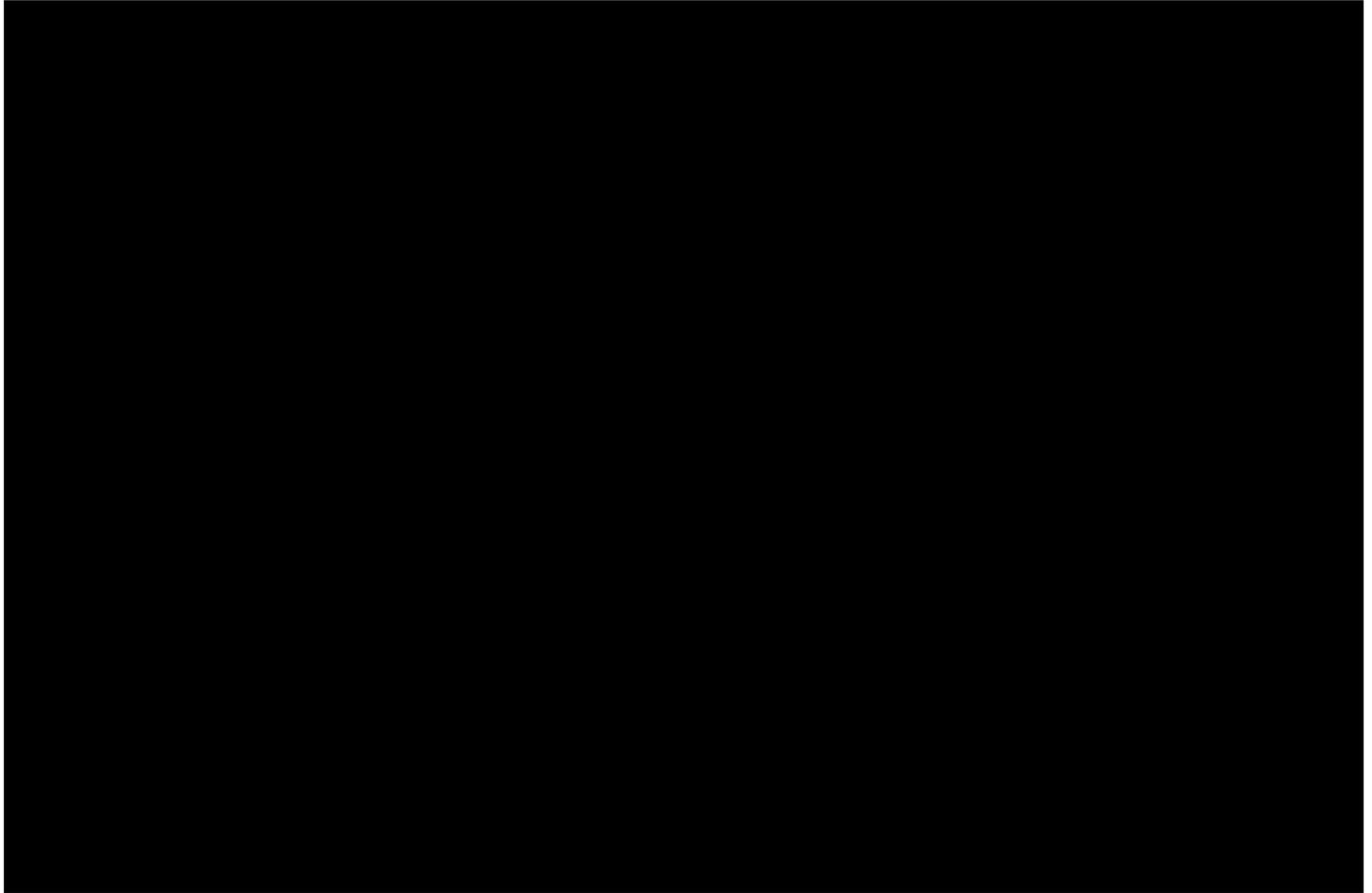
# Complex PROMPTs

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- Information on two planes of movement
- Take the motor phoneme out massed practice and distribute back into the word and/or phrase
- **ONLY PROMPT USED IN ISOLATION!**

# Complex PROMPT

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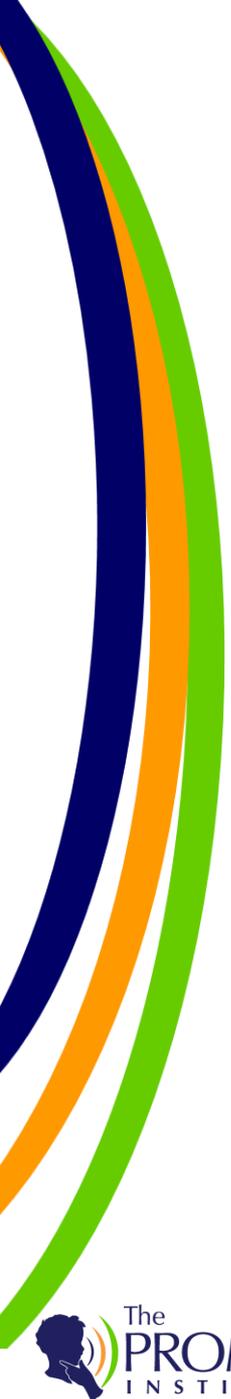
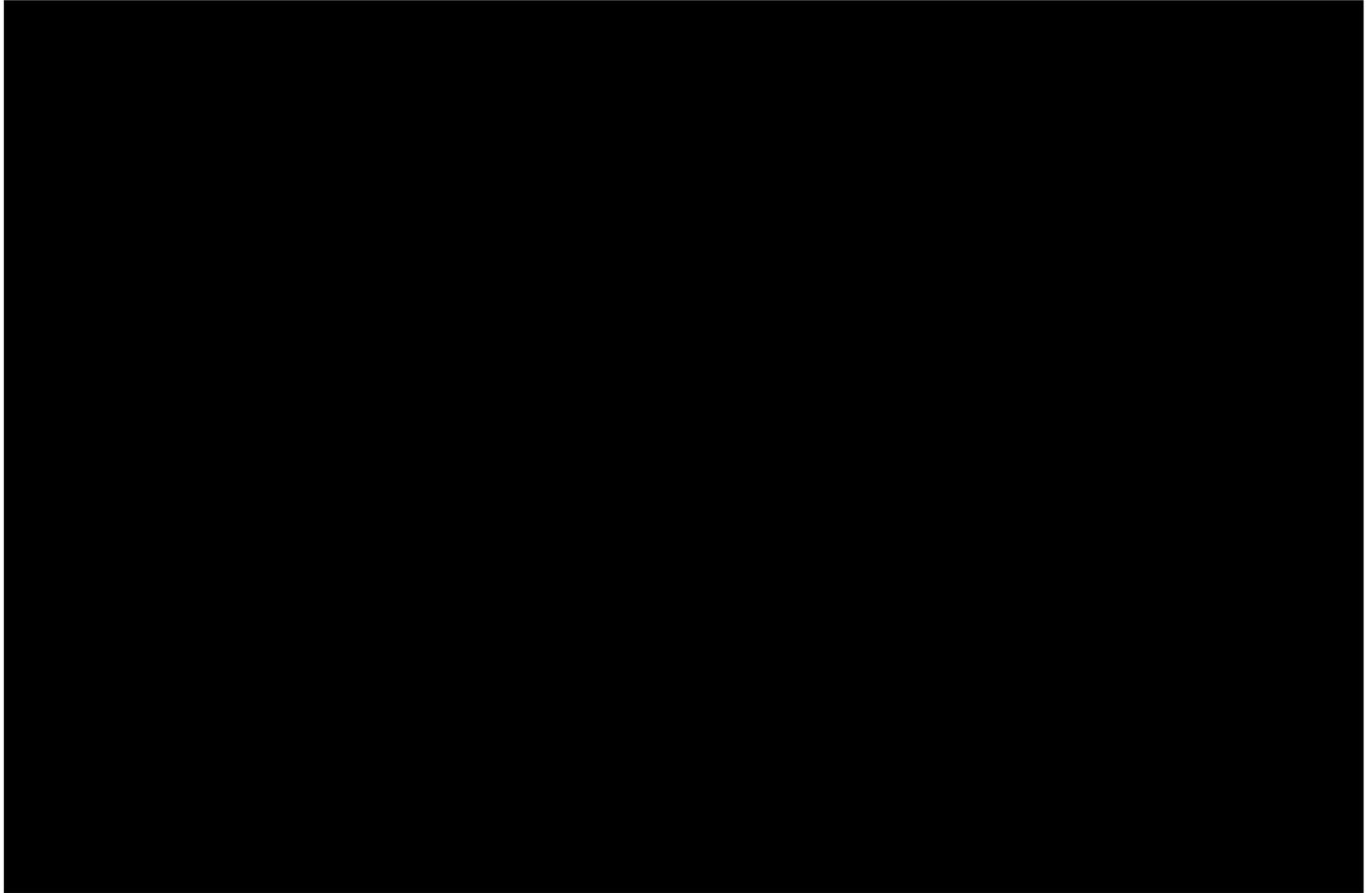
# Syllable PROMPTs

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- To establish a whole syllable shape at the labial-facial (horizontal plane of movement)

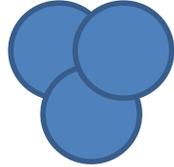
# Syllable PROMPT

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# PROMPT is not a touch cue method

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- Work in three domains 
- Never static phonemes- e.g. Not the “w” sound but work on lip rounding and use other lip rounded sounds (/o/, /u/, /ʃ/)
- Therapy is meaningful and in a functional context- Interactive communication focus

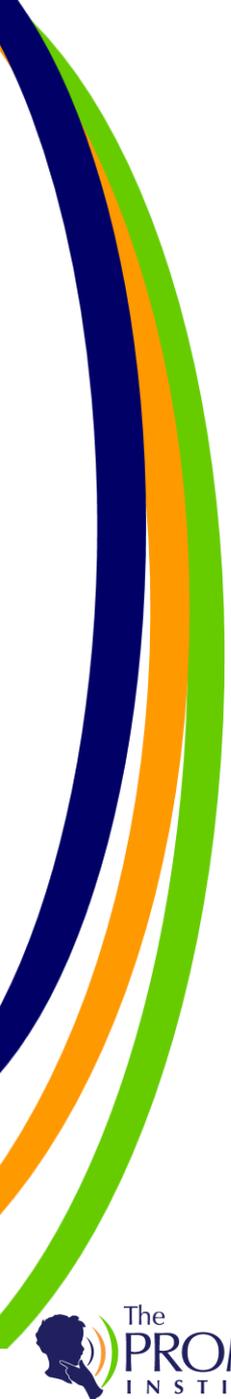
# Matthew 2009

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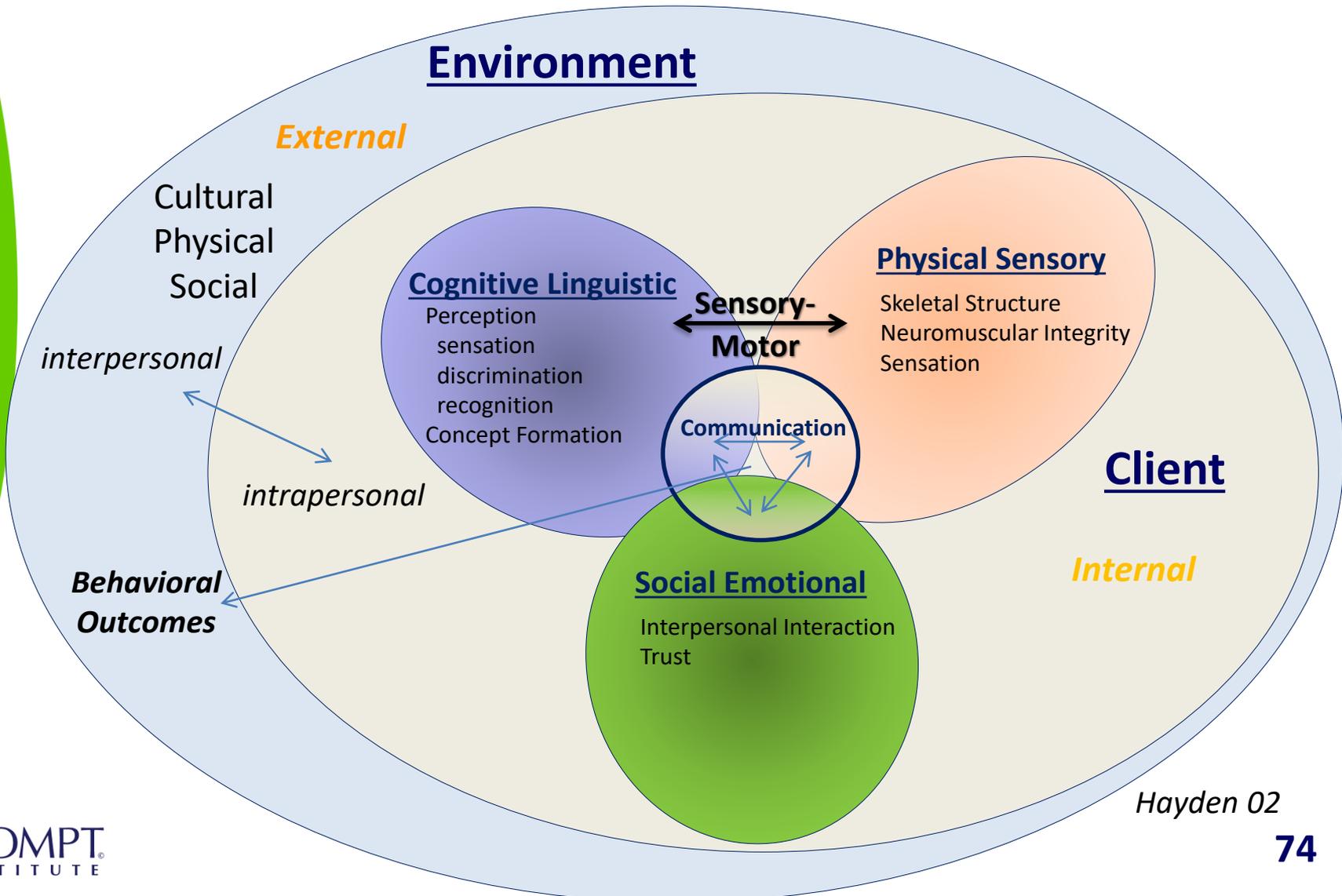
- Insert Matt here

# Matt 14 years

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# PROMPT Conceptual Framework



# Strengths and weaknesses.....

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- Always focus on the weakest domain to start
- Constantly rebalancing and re-shifting our domain focus
- Use the strongest domain as your support

# The PROMPT Appropriate Client

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- Can the client maintain a turn in the interaction?
- No-work on pre-linguistic skills and signaling
- Does the client indicate ideation with voicing?
- No? Establish that their voice has meaning
- Does the client understand simple concepts across communicative functions?
- No? Use PROMPT technique to map in language and concepts

# Three Uses of PROMPT

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## **1. To Develop An Interactive Awareness / Focus For Oral Communication**

- Social-Emotional Domain
- For children in pre-linguistic to early linguistic stages
- Develops attention and waiting
- Increase awareness of functional vocalization

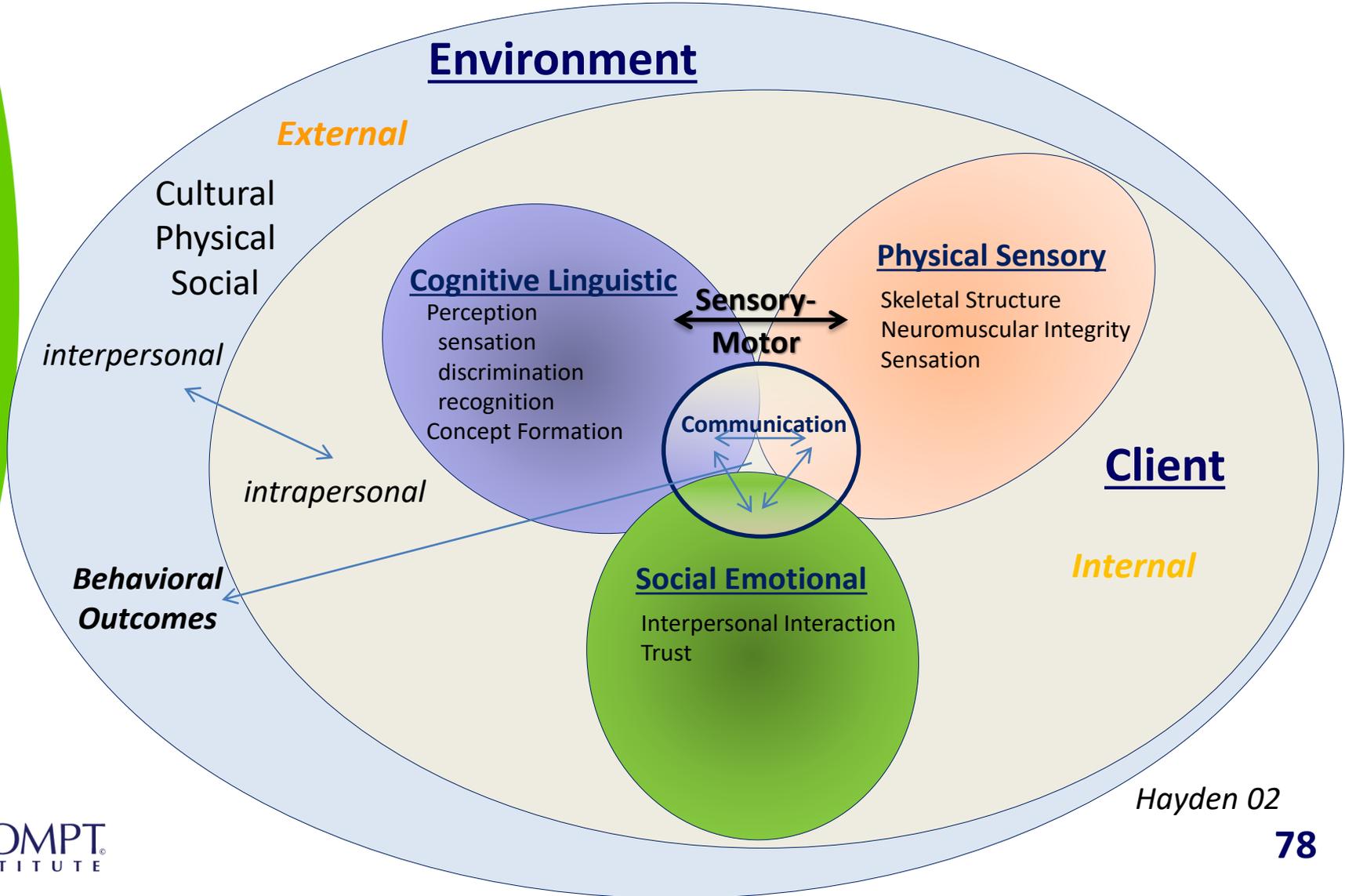
## **2. To Develop Integrated Multi-Sensory Associative Mapping For Cognitive Or Linguistic Concepts**

- Cognitive-Linguistic Domain
- Brings awareness to the concept – not for speech subsystem control
- Links auditory-tactile motor maps with cognitive and / or linguistic concepts

## **3. To Develop, Re-balance, Or Re-structure Speech Subsystems At The Sound, Word, Or Phrase Level**

- Physical-Sensory Domain
- Used for speech subsystem control

# PROMPT Conceptual Framework

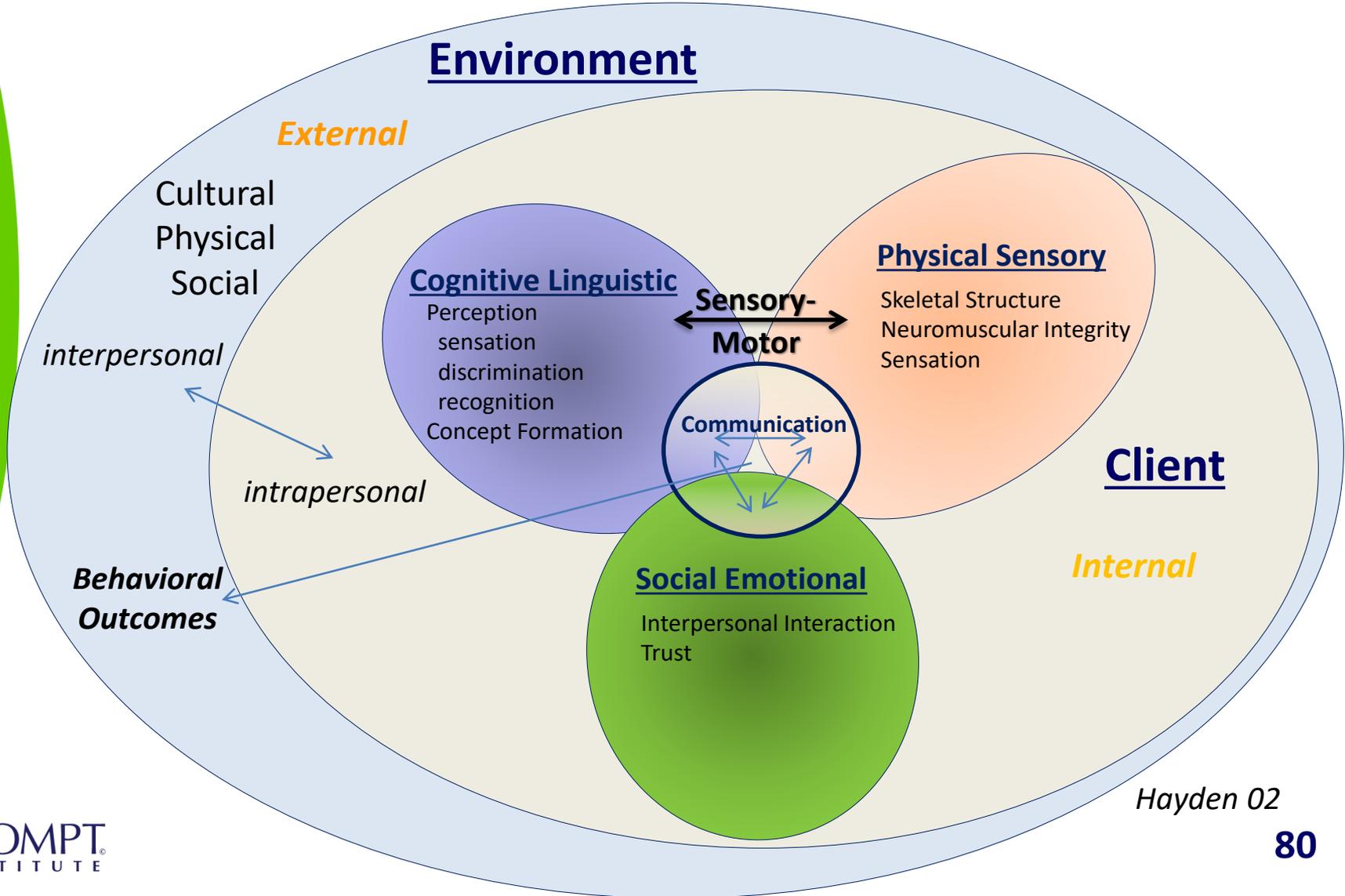


# Alex: Interactive Focus and Associative Mapping

Unspecified genetic disorder/Severe global developmental delays



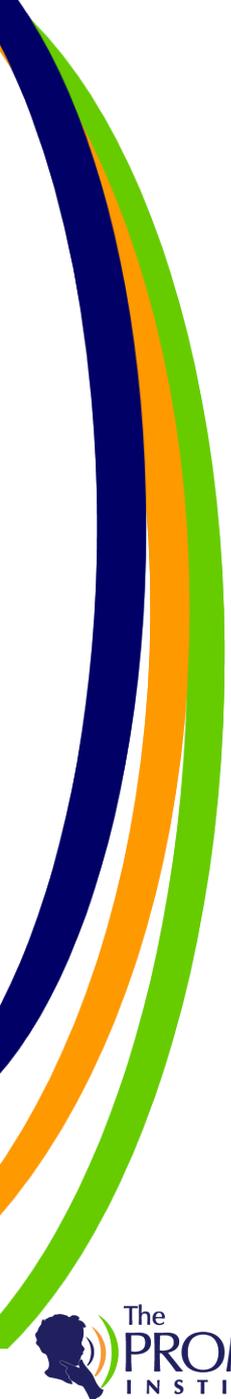
# PROMPT Conceptual Framework



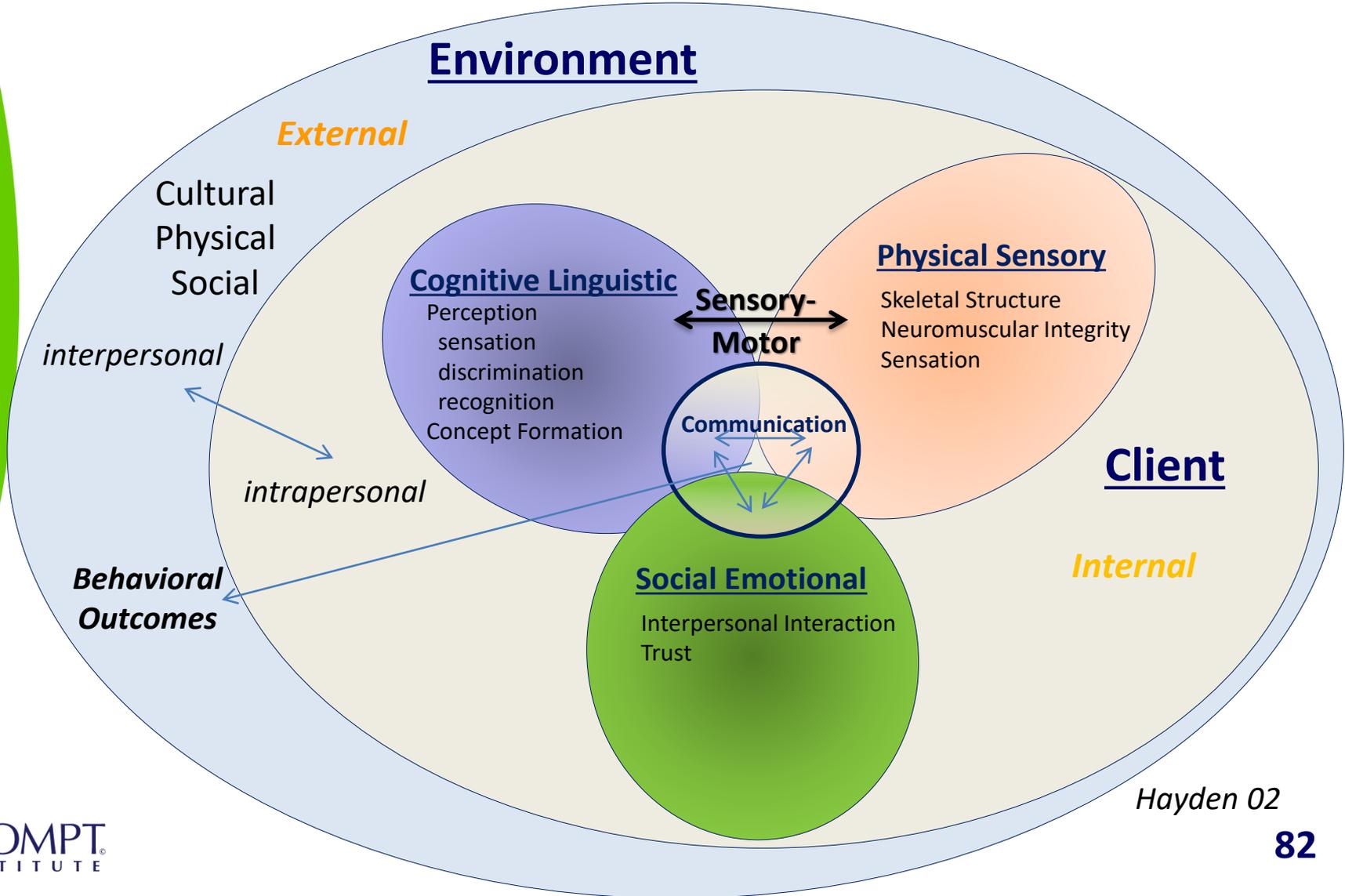
# Alex 2: Interactive Focus and Associative Mapping

## Autism and Dyspraxia

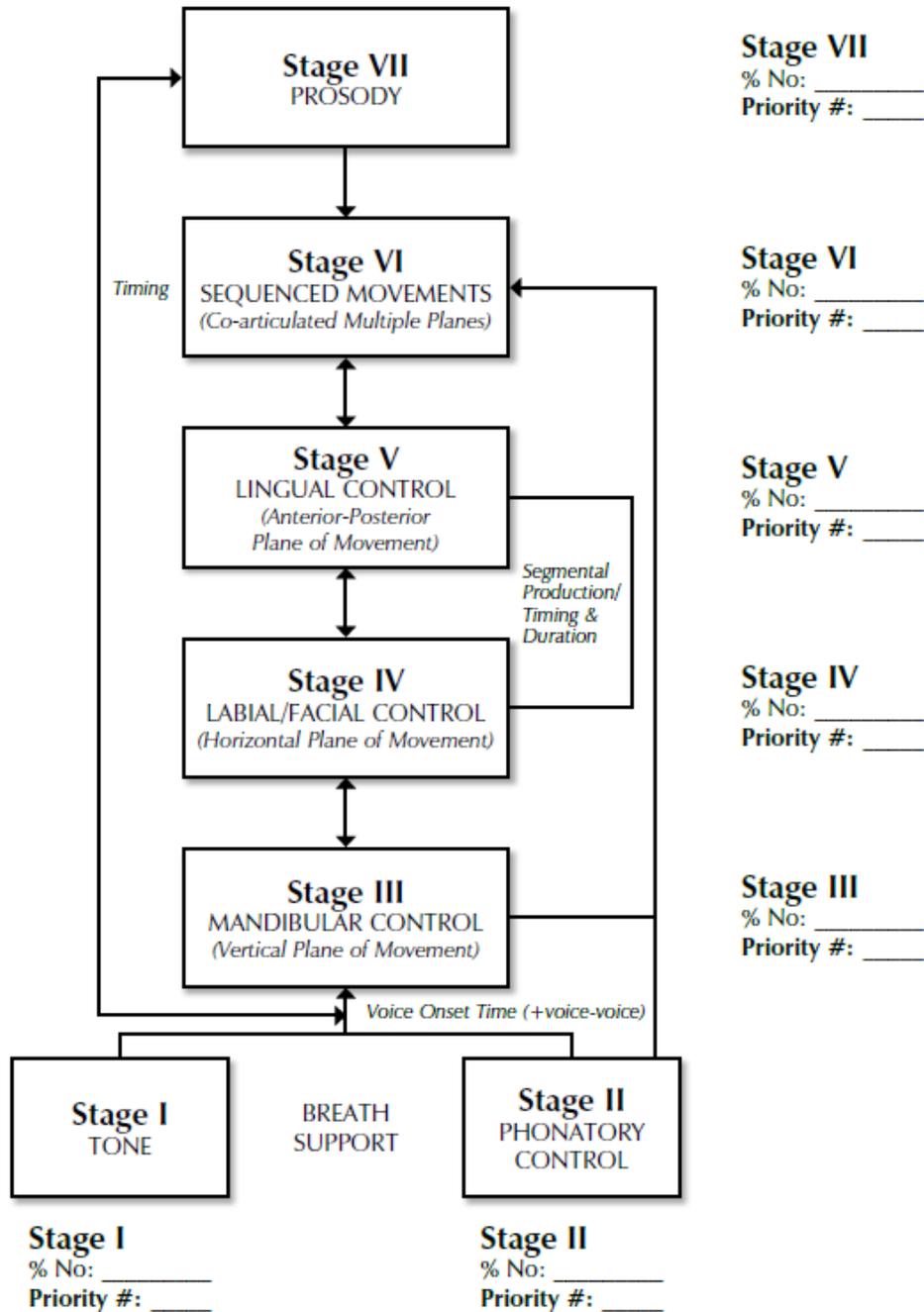
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# PROMPT Conceptual Framework

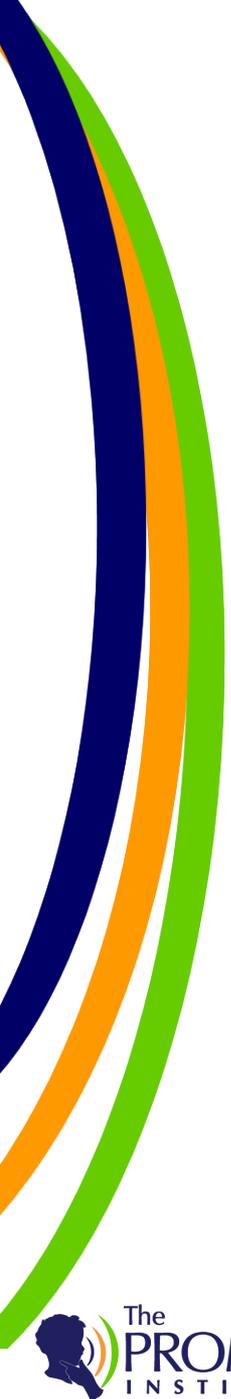


# MOTOR SPEECH HIERARCHY



# Speech Sub System Control

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Thank you!

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