

# Speech Management for Children with Cleft Lip & Palate: State-of-the-art

*Webinar series by the Cleft Palate & Craniofacial Committee*



Webinar #3

# Intervention: Cleft Palate Speech / Velopharyngeal Dysfunction

5<sup>th</sup> May 2022, 12.00-13.30 BST

Prof. Judith LeDuc, USA, Prof. Kristiane Van Lierde, Belgium, &  
Prof. Valerie Pereira, UK



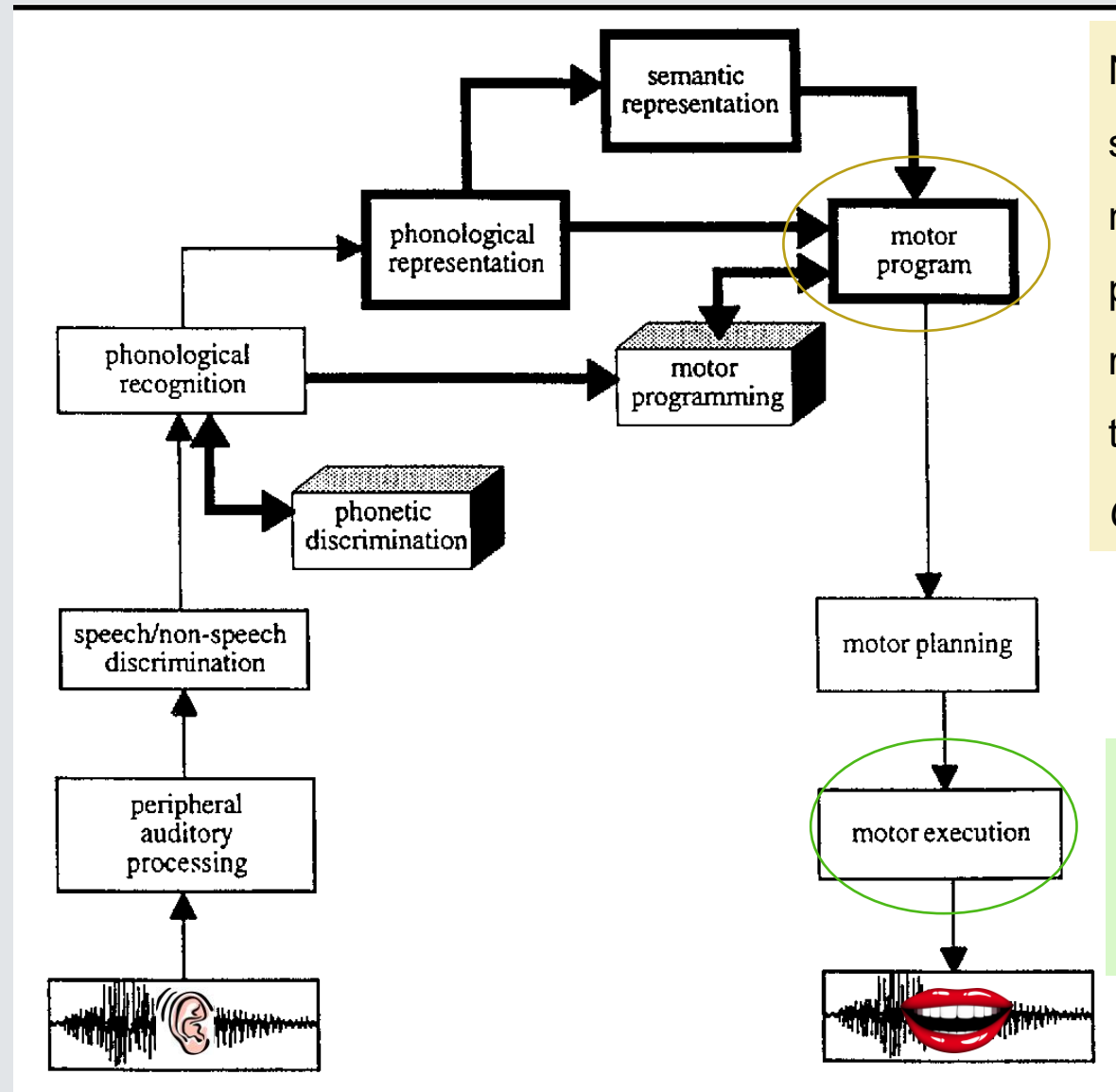
# CASE STUDIES

# Note

This is a post-webinar recording without videos that were played during the live webinar session. Where a video was played, the video icon is shown on the slide.

Certain images have also been removed due to possible copyright issues or intellectual property rights.

# Psycholinguistic Framework



Stackhouse and Wells, 1997

Non-oral CSCs: Even after VPD surgery, these motor programs are not updated and/or motor programming remains limited in the range of phonological units available to create these new motor programs

*Compensatory type errors*

Adapted from Calladine & Vance, 2019

Passive CSCs, palatal fistula(e), dental & occlusal anomalies

*Obligatory type errors*

# Psycholinguistic Framework

## Include nonword stimuli (or novel words)

- Creating new speech motor programs and inhibiting inaccurate old programs
- To explore ways of inhibiting long-standing articulatory patterns by introducing target phonemes using novel phonetic approximations (Speake and Harding-Bell 2019, p.375)

# Cleft-Specific Treatment Components

- Establish a place map for consonants
- Teach correct oral versus error sound contrasts
- Target sound selection
- Get the target sound(s) into the child's inventory
- Establish reliable self-monitoring & self-correction

Some specific techniques:

- h-insertion/ intrusive-/h/ technique
- Successive approximation

Peterson-Falzone et al. 2006; Golding-Kushner, 2010

# CASE STUDY 3

9;6 female, 22q.11.2 Deletion Syndrome L1= Cantonese

- Referred at age 9 years and 6 months
- Oral examination showed no evidence of CP or SMCP
- Nasendoscopy showed
  - no evidence of occult submucous cleft of the palate
  - inadequate closure with a coronal type of valving pattern
  - deep pharynx with large volume

**Sphincter pharyngoplasty at 9;11**

# CASE STUDY 3

- Post-operative assessment and speech intervention started at age 10;0
- Mode: telepractice
- Interventionists: MSc students **Ms Janet So** and **Ms Joy Tsang**
- Supervision: 100%, synchronous
- Session duration: 50-60 minutes
- Dose frequency: weekly
- Total intervention duration: 9 sessions



# Post-Operative Speech Results

- Post-op speech assessment (C-CSAT, Yiu et al., 2019)
  - mild hypernasality; no nasal emission; non-oral CSCs remained

Examples 跳 jump /t<sup>h</sup>iu/ → [ʔiu]

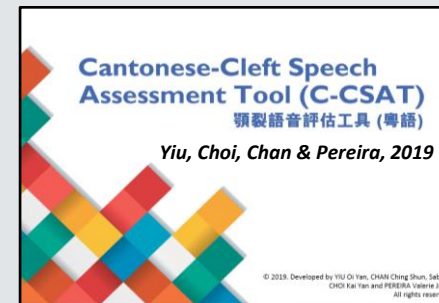
結)他 guitar /t<sup>h</sup>a/ → [ʔa]

多 /tɔ/ 'more' → [ʔɔ]

豬 /tsy/ 'pig' → [ʔy]

鼓 drum /ku/ → [ʔu]

**Not stimulable**



# Target Sound Selection

Target /t<sup>h</sup>/ identified

Rationale:

- work on anterior sounds first (in CLP)
- coronals as most frequently occurring phoneme in spoken Cantonese (54.9%)  
(Leung et al. 2004)
- aspirated easier than unaspirated phonemes (in Cantonese Cleft speakers)

Short-term goal: Production of /t<sup>h</sup>/ at single word level in monosyllabic and disyllabic words at an 80% accuracy rate

# Establish a Consonant Place Map

Visual platform + use of multimodal approach of watch, feel and listen

- teach about articulators and placement
- oral sounds ('mouth sounds') assigned positive attributes; glottal sounds ('throat sounds') assigned negative attributes

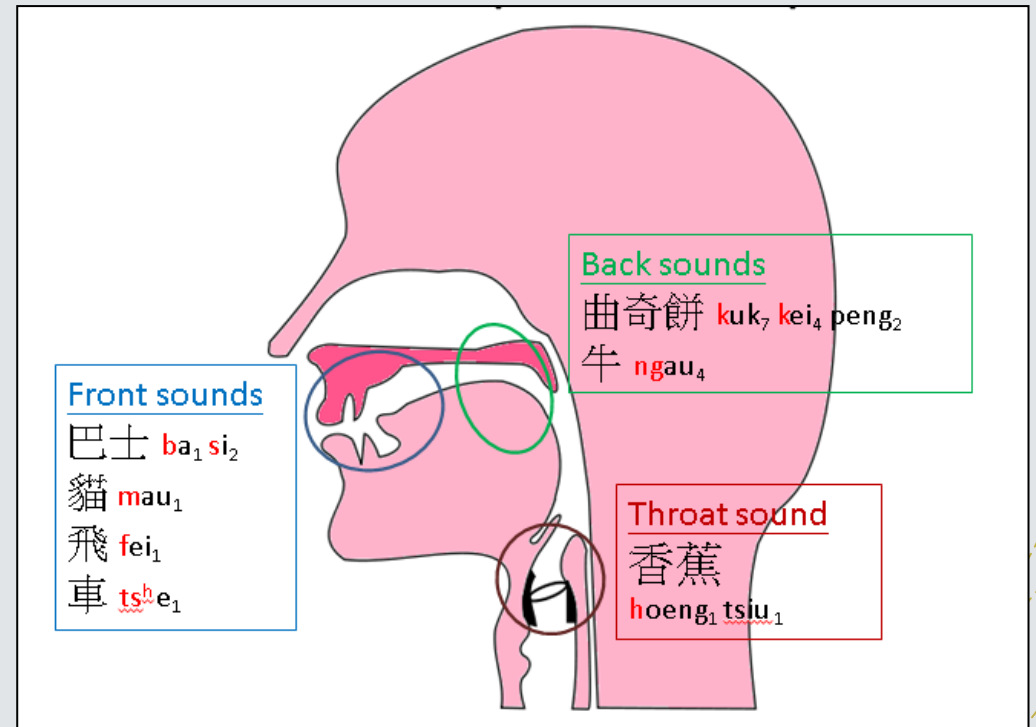
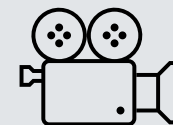


Image removed

# Teach correct oral vs error (/ʔ/) sound differences

Visual platform + use of multimodal approach of watch, feel and listen

Listening work (auditory discrimination) identify if a sound made by the clinician is a 'mouth sound' or a 'throat sound' and whether this is a good sound or bad sound



# Introduce /h/

To open the glottis, minimize subglottal pressure & generate more supraglottal airflow to build up oral pressure (Golding-Kushner, 2010; Petersone-Falzone et al., 2019)

Multimodal cueing

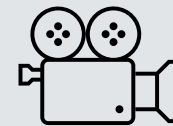
High dose

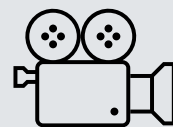
Image removed

/h/ + vowel

Verbal cue: Don't separate the two sounds, say them together"

Visual: Slide Show view function in Microsoft® **PowerPoint**®





# /h/- insertion or Intrusive /h/

/h/ + v + /t̚/

Focus only on correct placement of articulators; no release

Direct imitation/modelling

High dose (53/60, 88%)



/h/ + v + /t/ + /h/ + v

High dose (52/54, 96%)



~~/h/ + v + /t/~~ + /h/ + v

Image removed



# Transitioning to Words

**/t<sup>h</sup>/ + vowel using nonsense syllables (nonwords)**

Stimuli: /t<sup>h</sup>a/, /t<sup>h</sup>ɛ/, /t<sup>h</sup>i/, /t<sup>h</sup>ɔ/, /t<sup>h</sup>u/, /t<sup>h</sup>œ/ and /t<sup>h</sup>y/

High dose

Direct imitation and clinician modelling

Incorrect productions: use verbal phonetic cueing relating to a more fronted tongue placement

# Real Words

## Monosyllabic words

E.g., /t<sup>h</sup>iu3/ (jump), 兔 /t<sup>h</sup>ou3/ (rabbit), 檯 /t<sup>h</sup>ɔi2/ (table) . . .

Overall accuracy rates were at 89% level

## Disyllabic words

E.g., SIWI, 跳高 /t<sup>h</sup>iu3 kou1/ (high jump)

E.g., SIWF 飛踢 /fei1 t<sup>h</sup>ɛk8/ (kick)

Dose= 99 trials combined; overall accuracy rate of 91%

# Treatment Outcomes

STG: Production of /t<sup>h</sup>/ at single word level in mono and disyllabic words at an 80% accuracy rate achieved.

LTG: Spontaneous production at conversational level across meaningful contexts!!!

Some lessons learnt:

- Possible to achieve success in late repair and in early adolescence at least up to a single-word level
- Combination of SSD TX approaches and cleft-specific components and techniques
- Consider Tx efficiency and available resources

# Case Study 4

7;0 Female, L1: English

Velopharyngeal mislearning

Nasendoscopy and palatal x-ray showed no evidence of a cleft condition (undertaken elsewhere)

Initial profile: all sibilants are replaced with non-oral CSCs

$/s/, /z/, /ʃ/, /ʒ/, /tʃ/, /dʒ/ \rightarrow [ɲ]$

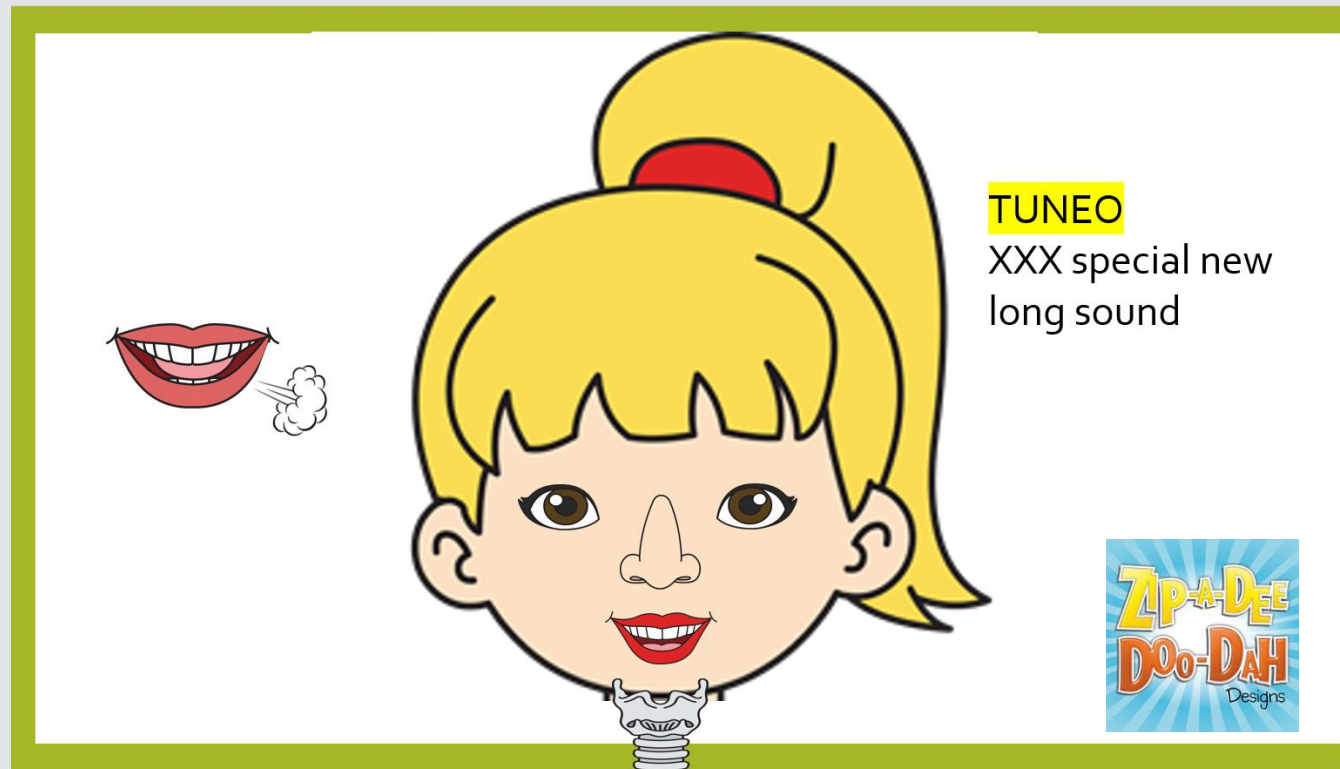
As active nasal fricatives

# Case Study 4

Recap the Psycholinguistic Framework (Stackhouse and Wells, 1997)

- Create new motor programmes and inhibit old incorrect ones
- Use novel or nonword stimuli
- Confront the child with his or her own speech errors to encourage self-monitoring and updating of motor programs
- Explore ways of inhibiting long-standing articulatory patterns by introducing target phonemes using novel phonetic approximations (Speake and Harding-Bell 2019, p.375)

# A Novel Sound



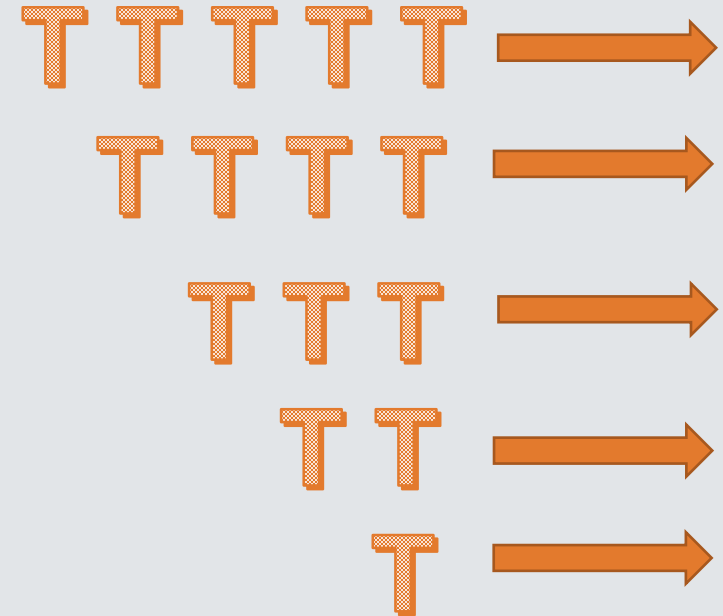
# Successive Approximation

- /t/ as facilitative phonetic context
- Repeated /t/ then lengthened at end of sequence
- Reduce no. of repetitions of /t/



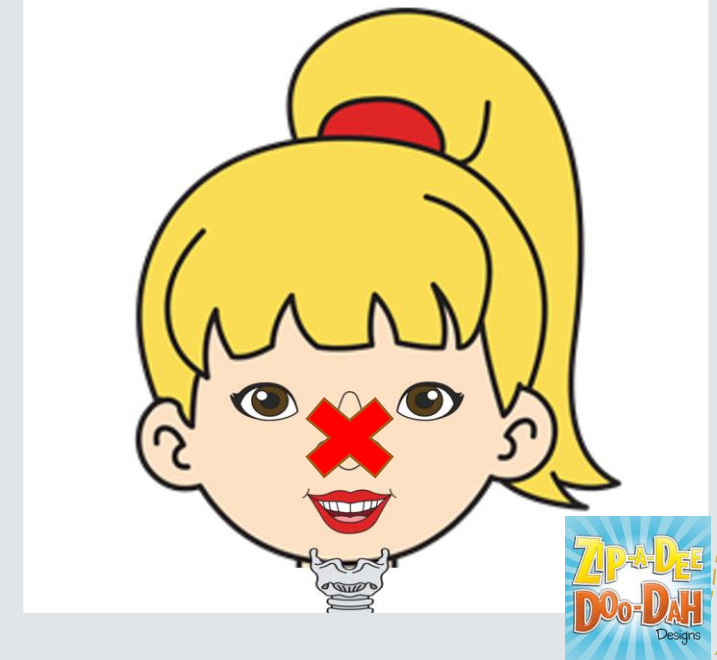
What if the child produces the lengthened sound through the nose?

- **Use nose-holding**
- Large amount of practice



# Successive Approximation

- Provide opportunities for self-monitoring: *What do you think? Was it a good sound? Why yes or why no?*
- Provide specific feedback: *I hear the sound coming out of your nose and not your mouth / I didn't like that sound very much / That was a good sound because it came out from your mouth*



**NB.** At no point say you are working on the /s/ sound as this alerts the old and wrong motor speech patterns



# Tuneo + vowel: Nonsense Syllables

Image removed

# Tuneo in Nonwords!

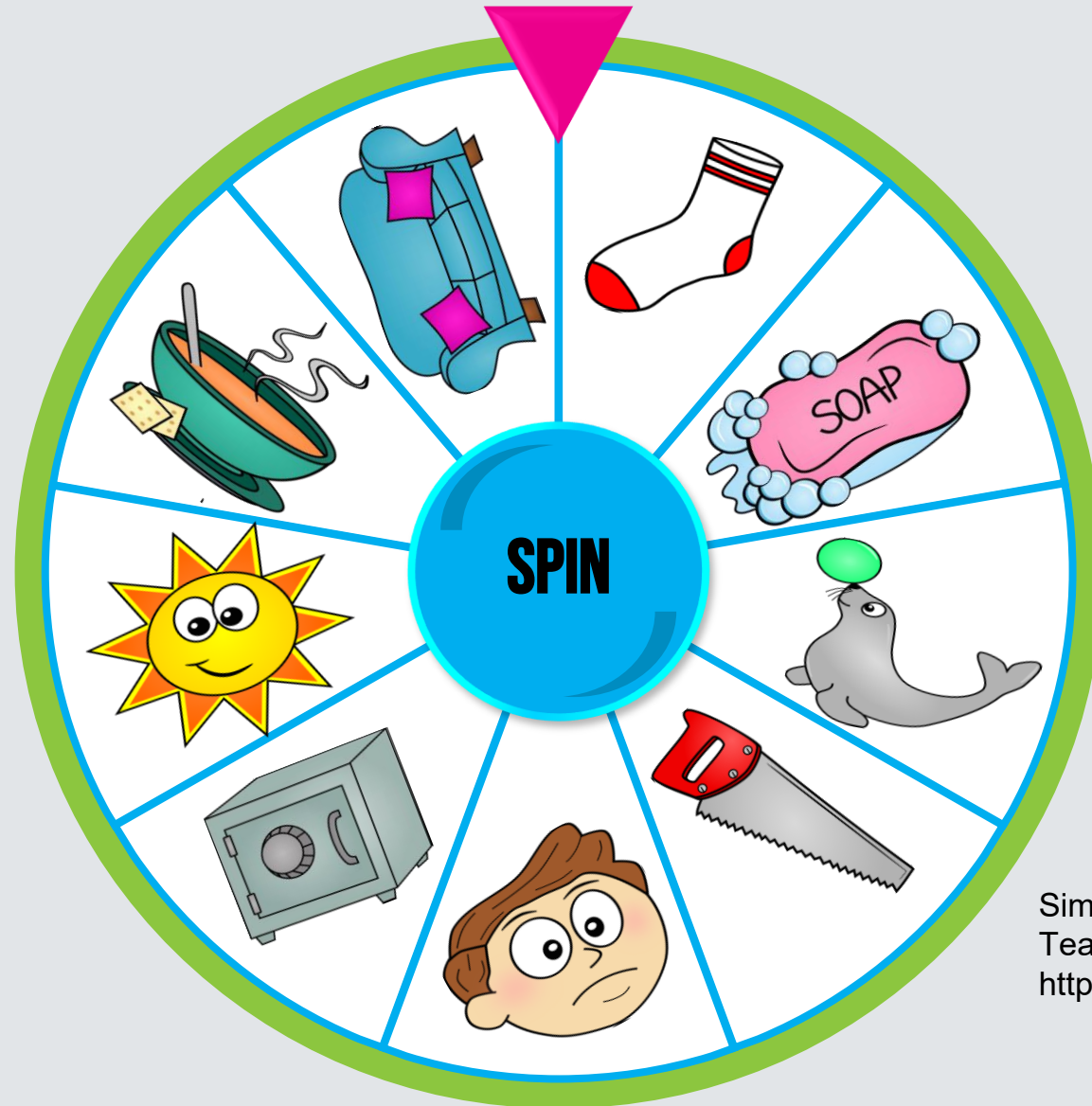
Give  
each  
Monster  
a  
name  
Starting  
with  
**Tuneo!**

Clipart- monsters

<http://clipart-library.com/monsters-cliparts.html>

# Initial /s/ Spinner

What happens if you  
move too fast?



Simply Speaking SLT  
TeachersPayTeachers  
<https://www.teacherspayteachers.com>

# Transitioning to Real Words (and across the linguistic hierarchy)

- Is the child ready?
- Is the new speech motor program well-established?
- Importance of sufficient high dose (large practice amount) first to establish a new and correct speech motor program for 'Tuneo'

Images removed

## Other Phonemes?

/s/, /z/, /ʃ/, /ʒ/, /tʃ/, /dʒ/ → [ŋ]

- Traditional articulation approach!
  - Visual cues: mirror work and modelling to demonstrate lip rounding; Tactile cues: Hand in front of lips to feel airstream; Facilitative sounds: 'oo'; Methods of elicitation: form a sustained 's' sound, move tongue tip back slightly + add lip rounding
- Mouth vs nose: recall specific feedback, oppor for self-monitoring and self-correction

Image removed

# Treatment Efficacy

- Dose- high during sessions and home practice
- Session duration- 60 minutes; Dose frequency- 1x/week
- Total intervention duration- 9 sessions over a 2 to 3-month period
- Accuracy across the 6 phonemes at conversational level

NB. For /s/ and /ʃ/, we worked on voiced counterparts

NB. (Self) Generalization to /tʃ/, /dʒ/

# X Non-Speech Oro-Motor Exercises

- Do **NOT** do exercises to strengthen and/or stimulate the oral musculature e.g., blowing bubbles, sucking to exercise/strengthen the palate muscles, chewy tube to strengthen jaw muscles etc.
- Cleft palate speech disorder is conceptualised as an articulation disorder (with phonological consequences) and is NOT a result of muscular weakness.

Images removed

Golding-Kushner 2001, Ruscello 1982; Shprintzen et al. 1974; Van Demark & Harding, 1989; Wolfaardt et al. 1993; McWilliams et al. 1984, 1990; Golding-Kushner, 1995; Starr 1993; Wolfaardt et al 1993; Kummer, 2006; Ruscello, 2009; McCauley et al., 2009

# X Non-Speech Oro-Motor Exercises

- No relationship btw frequency and complexity of movements in the vocal tract during speech and nonspeech activities
- No proven relationship between the strength of indiv. oral structures and accuracy of articulation
- X Fractionism: isolated movements may not be equal to the whole skill being learned

Golding-Kushner 2001, Ruscello 1982; Shprintzen et al. 1974; Van Demark & Harding, 1989; Wolfaardt et al. 1993; McWilliams et al. 1984, 1990; Golding-Kushner, 1995; Starr 1993; Wolfaardt et al 1993; Kummer, 2006; Ruscello, 2009; McCauley et al., 2009



## However . . .

- Low resistance blowing toys can be used to demonstrate forward moving or oral airflow but this should not be a therapy goal in itself.
- It is important to associate gentle blowing with a sound e.g. /p/

### Examples:

Associate /p/ with oral airflow; let child feel this

Blow cotton balls across table with /p/ or 'pi'

Images removed



# ROUND-UP & GUIDING PRINCIPLES

**PROF JUDITH LEDUC**

# Guiding Principles of Therapy

A. Therapy goal is placement and redirect air stream

B. Its impossible to accurately assess VP closure with artic errors

C. Repetitions and multiple trials – not an easy fix

D. Carryover and generalization take time. Do not discharge too soon

E. Most obligatory errors are from an anatomical defect; therefore go for placement and the errors will take care of themselves once the defect has been resolved

F. Compensatory articulation errors must be targeted directly

# Where to Start

Target more visible phonemes and more easily cued phonemes first.

---

Generally, voiceless phonemes are easier to produce than voiced phonemes.

---

Rename the target sound, if necessary, to facilitate new motor learning.

---

Obtain target phoneme in isolation with 100% mastery before advancing to higher levels of the hierarchy. ASHA- SIG 5

# Where to Start

6. If VPD/VPI is present, use nasal occlusion to teach oral airflow or prevent nasal escape. Fade from nasal occlusion as oral placement for target phoneme emerges.

7. Speech therapy is appropriate if compensatory misarticulation errors are present, even if the child has an insufficient velopharyngeal mechanism. Therapy may begin before surgical intervention.

8. Use only 1-2 sounds at a time during a treatment plan.

9. If VPD/VPI is present, use nasal occlusion to teach oral airflow or prevent nasal escape. Fade from nasal occlusion as oral placement for target phoneme emerges.

# Where to Start

10. Speech therapy is appropriate if compensatory misarticulation errors are present, even if the child has an insufficient velopharyngeal mechanism. Therapy may begin before surgical intervention.

11. Non-speech oral motor exercises (NSOMEs) are not effective for treatment of speech sound disorders. A speech disorder requires speech therapy!



pixta.jp - 28869695