

Introduction to Stuttering

Communication Disorders, Swallowing Disorders, and Speech Therapy - An Introduction

言语治疗概论

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言语治疗概论



Manwa L. Ng (吴民华)

PhD.

Duquesne University

University of Hong Kong

2023-24

Agenda

- What is Stuttering?
- Characteristics of stuttering
- Epidemiology of Stuttering
- Assessment of Stuttering
- Intervention of Stuttering

The Monster Study

- Carried out by Dr. Wendell Johnson and his student, Mary Tudor in 1938 at University of Iowa and the Iowa soldiers and Sailors Orphans' Home
- 22 (10 stutterers and 12 normal) orphans were selected, and they were not told the intent of the study
- The nonstuttering 12 subjects were randomly divided into two groups, 6 each (IIA and IIB)
- IIA children (5-15 yo) all received feedback from STs of having stuttering speech... for five months

The Monster Study

What is Stuttering?

- Also called stammering or childhood onset fluency disorder
- “Dysfluency”
- Speech disorder involving frequent and significant problems in fluency and flow of speech
- People who stutter (PWS) know what they want to say, but they just have difficulty saying it

Features of Stuttering

- Difficulty starting a word, phrase or sentence
- Prolonging a word or sounds within a word
- Repetition of a sound, syllable or word
- Brief silence for certain syllables or words, or pauses within a word (broken word)
- Addition of extra words such as "um" if difficulty moving to the next word is anticipated
- Excess tension, tightness, or movement of the face or upper body to produce a word
- Anxiety about talking
- Limited ability to effectively communicate

Other Stuttering Features (Secondary Mannerisms)

- Rapid eye blinks
- Tremors of the lips or jaw
- Facial tics
- Head jerks
- Clenching fists



PWS

A Stuttering Salesperson

Disfluencies

- Word repetition
 - “Cookies **cookies** and milk”
 - “车....车....车子很多”
- Sound/Syllable repetition
 - “I **w-w-w**-want a drink.”
 - “**Go-go-go** away.”
 - “wuwuwuw..玩具”
- Phrase repetition
 - “He is-**he is** 4 years old.”
 - “他们他们很累，因为因为。。。 ”
- Interjection
 - “I **um** need to go home.”
 - “我 eh 不去了”

Disfluencies

- Revision
 - “I **had-I lost** my tooth.”
 - “妹妹打 - 倒翻了水杯”
- Incomplete phrase
 - “*His name is* ... I can't remember”
- Broken word
 - “I want a c (**pause**) cookie.”
- Prolongation
 - “**Sssssssss**am is nice.”
 - “ss...四个人”, “ffffff....飞机”

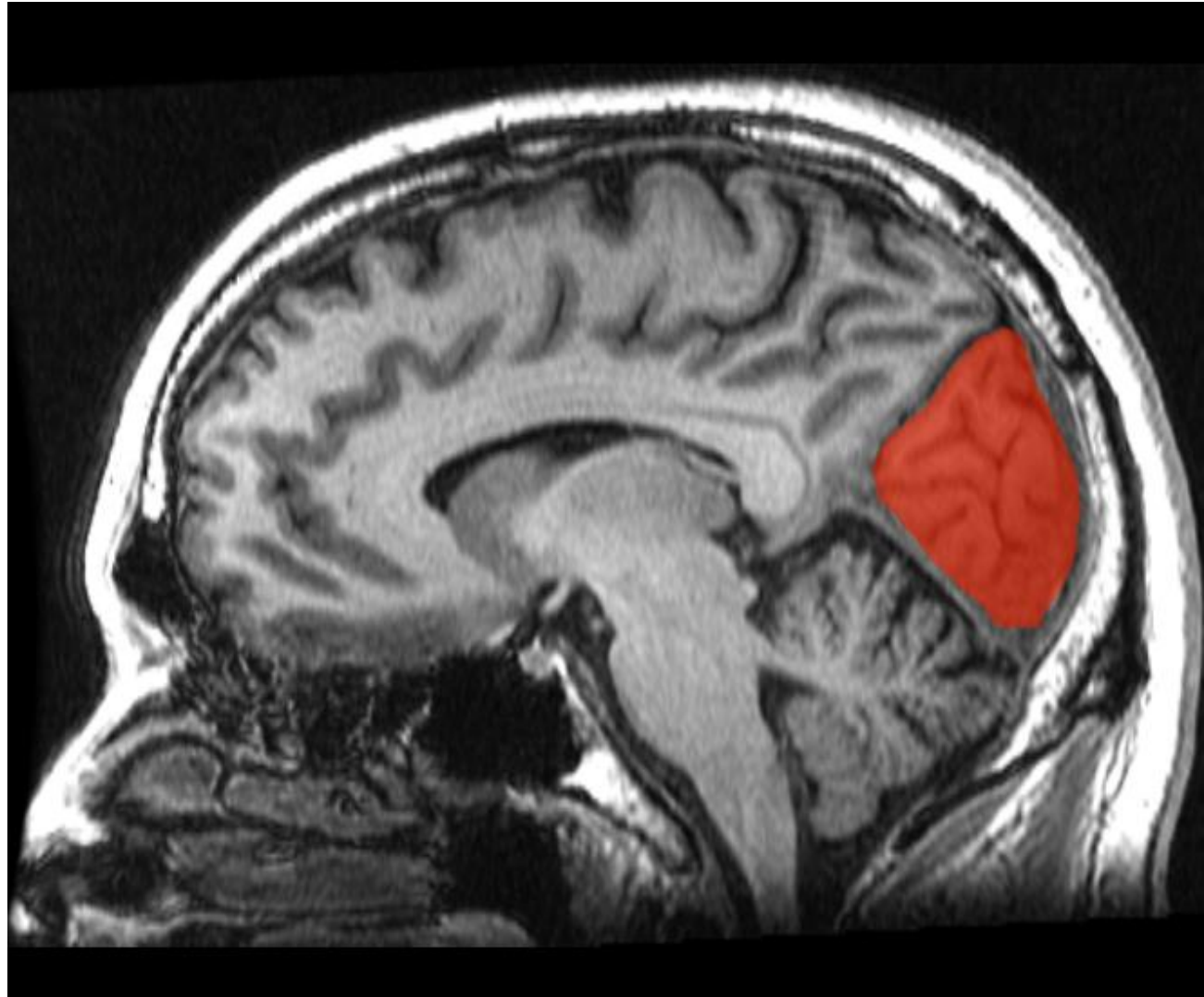
Normal Developmental Disfluency

- Usually starts between 2 and 6 years of age
- Many go through normal periods of disfluency lasting less than 6 months
- If longer, need to seek help

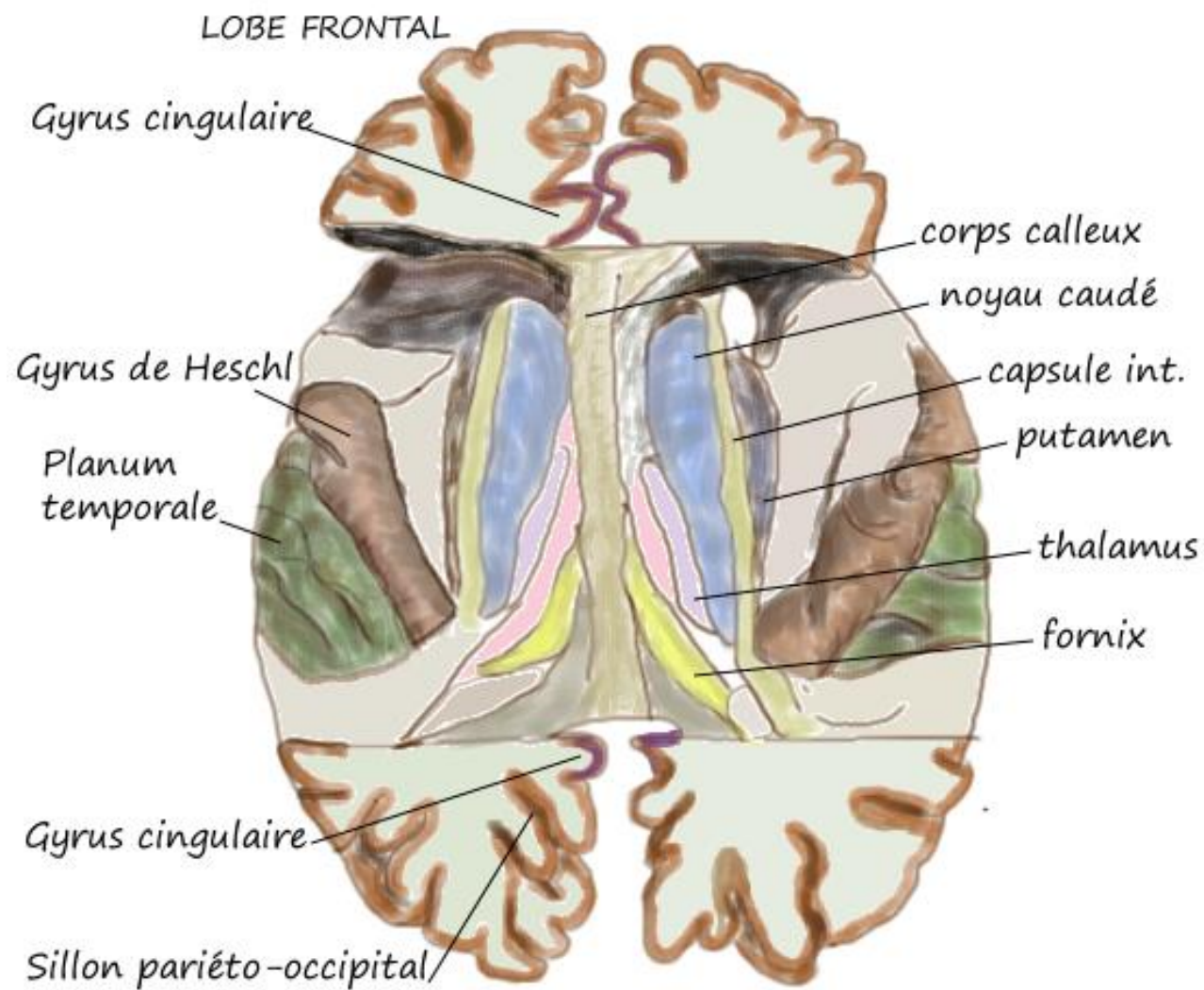
Causes of Stuttering

- Family history
 - Many PWS have a family member how also stutters
 - May be related to genetic make up
 - Related to chromosome 2, 3, 5, 7, 9, 12, 13, 18, and 21
- Brain differences
 - PWS may have differences in the way the brain works for speech
 - During speech
 - Increased right hemisphere activation
 - Decrease temporal lobe activity
 - Unusual cerebellar activation
 - Stronger frontal lobe activation
 - Increased activation in cuneus and right lobule IV cerebellum
 - Anatomy
 - Increased size of right planum temporale
 - Increased number and variability of gyri
 - Abnormality in white matter
 - Size of corpus callosum

Cuneus



Planum Temporale



Causes of Stuttering

- Linguistic factors
 - Linguistic stress
 - Word initial syllable
 - Low frequency and less familiar words
 - Word class: content words vs functional words
 - Syntactic complexity
 - Utterance length
 - Phonetic complexity
 - Tones?

Epidemiology - Incidence Rate

- Danish (1990-1991)
 - All children from the island of Bornholm
 - 9 year follow up
 - By 3 years of age: 4.99%
 - By 9 years of age: 5.19%
- Australian
 - 1619 children from age of 2 in Melbourne
 - By 3 years of age: 8.5%
 - By 4 years of age: 11.2%
- Japanese (2009-2012)
 - 2274 children at 3 years of age from Hokkaido
 - By 3 years of age: 1.41%

Epidemiology - Onset

- 30-36 mos
- Yairi & Ambrose (2005)
 - Longitudinal study of 163 CWS
 - 24-35 mos (60%), 42 mos (85%), 48 mos (95%)
- Reilly et al. (2009)
 - Longitudinal study of 1619 children (137 CWS)
 - Median = 29.9 mos
- Shimada et al. (2018)
 - Longitudinal study of 2274 children
 - 25-30 mos (21.9%), 31-36 mos (59.4%)
- More common in younger children and when they are closer to 3 yo

Epidemiology - Gender Ratio

- Near 3 years of age:
 - Boys : girls = 1.58~2.1 ; 1
- Older
 - Boys : girls = 2.81~7.5 : 1
- Boys >> girls. Why?

Demand and Capacity Model

- Demand for fluency > capacity of fluency
- Capacity
 - Speech motor control
 - Language development
 - Social and emotional functioning
 - Cognitive development
- Demand
 - Within the child
 - External environment

Assessment and Intervention

Assessment of Stuttering

- Case history
- Speech and language skills
- Fluency assessment
 - Frequency
 - Severity
 - Types
- Fluency related QoL, general health related QoL
- Impact of stuttering

Intervention of Stuttering

- Amount of stuttering
- Child's reaction to his/her stuttering
- How does stuttering affect the child's daily life?
- How do others react to his/her stuttering?
- Age of child
- Mainly behavioral, can be instrumental

Before & After Behavioral Treatment



Delayed Auditory Feedback (DAF) on Normal Speakers



DAF on PWS

Beginning of the Evaluation

End of Handout