

Real-Time Analysis of Speech Fluency
(Yaruss, Journal of Speech-Language Pathology, 1998)

- **Diagnostic assessment typically looks at frequency of disfluency, duration, types, and severity of disfluency of disfluency in spontaneous speech. Diagnosis also includes potential interactions between fluency and speech/language development and oral-motor skills. Also the client's reaction to stuttering and attitudes about speaking.**
- **The two most fundamental measures include frequency of disfluency and types of disfluency.**
- **Thorough evaluation is important for planning treatment.**

Purpose of Real-Time Analysis

- **Provide a measure of the frequency of various types of disfluency occurring in a speech sample.**
- **Does not require a transcription.**
- **Quick and easy to perform.**
- **Provides information important to clinical decision-making.**
- **Flexible by allowing the clinician to select syllable or word measurement; the behaviors measured (types of disfluency vs. stuttering); and sample size. Other measures such as duration and number of iterations can also be measured.**
- **Transcribed analysis is time consuming and Real-Time Analysis can be done more frequently, thus is a better tool for session-to-session documentation.**

Procedures for Conducting Real-Time Analysis

- **Basic procedure involves observing a speech sample and counting fluent and disfluent words (either video tape, audio tape or in person).**
- **Step 1: Observe the client speaking for a few minutes to become familiar with the general speaking style and pattern of disfluencies in the speech.**
- **Step 2: Begin coding speech with a dot (.) or a dash (-) for fluent words and an (x) or coding symbol for a disfluent word.**

Coding Symbols: R = repetitions
P = prolongations
B = blocks
p = long pause
rv = revision
F = filler/starter

- **Representative Sample. Do not worry about missing words or maintaining pace with the speaker. Focus on obtaining a representative sample.**

- **Disfluency Count Sheet:** word count or syllable count-most differentiate between less typical and more typical disfluencies.
- **Specific Considerations:**
 - . multiple iterations of a single disfluency
 - .disfluencies involving several words (not always a correlation between number of disfluencies and words)
 - .multiple disfluency types on a single word or phrase; options include selecting the most severe type of disfluency, entering a code for each type of disfluency, or develop a code for disfluency combinations.
 - .formulaic utterances/lexicalized phrases
 - .repetitions that are not disfluent
 - .toy noises
 - .unintelligible utterances
 - .non-representative samples
 - .additional markings: vertical slash for utterance breaks, superscripts for number of iterations, heavy dots for the presence of visible or audible tension.
- **Intrajudge agreement is important.**

FLUENCY FRIDAY PLUS: TYPES OF DISFLUENCIES (Gregory, et. al.)

More Typical Disfluencies (Disfluencies without tension; Counted but separated from disfluencies with tension)

- **Hesitations:** silent pause of 1 second or longer
(ie: I.. *pause*)..want the red one)
- **Interjections:** meaningless words irrelevant to the message [um/like/well/uh]
(ie: I *um* want the red one)
- **Revisions:** change in content, grammar, or pronunciation of a message
(ie: I want the *blue*...*the red* one)
- **Unfinished words:** a word that is abandoned and not completed later in the message (ie: I want the *oran*....*red* one)
- **Phrase repetitions:** repetition of at least 2 complete words of the message
(ie: *I want...I want* the red one)
- **Word repetitions** (up to 2x): repetition of a whole word in a slow casual way
(ie: *II* want the red one)

Less Typical Disfluencies (Disfluencies with tension; considered as stuttered words)

- **Word repetitions** (3x or more): repetitions of a whole word
(ie: *IIII* want the red one)
- **Interjections**: (used as a starter, or 3x or more, or used rapidly)
(ie: *Um Um Um* I want *well well well* the red one)
- **Syllable repetitions**: more than a sound repetition and less than a word repetition
(ie: I *wa wa* want the red one)
- **Sound repetitions**: repetition of a phoneme that does not stand alone as a word
(ie: I want the *r r r* red one)
- **Prolongations**: duration of a phoneme (may include pitch rise and tension)
(ie: *IIIIIIII* want the red one, or I *waaaaaaa*ant the red one)
- **Blocks**: inappropriate timing for initiation of a phoneme or release of a stop element (ie: I want..... the red one) [can include fixed articulatory posture and tension]
- **Multi-component**: combination of disfluencies right in a row (less or more typical types) (ie: *III waaaaaaa*ant the red one, or *I, uh uh, wa wa wa* want the red one)

Tips for Counting Stutters

- A **Repetition of a sound, syllable, or word is one disfluency regardless of the number of iterations.** (i.e.: *Um um um um* I *wa wa wa* want the red *uh* one = 2 stutters and 5 syllables)
- A **Prolongation of a sound is one disfluency.**
- A **Block on a word is one disfluency regardless of the duration.**
- An unnaturally **long pause is one disfluency if the pause calls attentions to itself.**
- A **revision is one disfluency.**
- In reading, the omission, modification, or addition of a word or words is one disfluency.
- **Filler words or starters are counted as disfluencies; multiple filler words used to initiate an utterance are counted as one disfluency.**

FLUENCY FRIDAY PLUS: 300 Syllable Speaking Analysis Form

Student: _____

Age: _____

Date of Sample: _____

Speaking Condition: play _____ monologue _____ conversation _____

Communication Partner: clinician _____ parents _____ peers _____

Was the student asked to use a fluency strategy prior to the sample? Yes or No

Instructions:

- Use calculator to count 300 syllables (1+1 =, then press = after that for each syllable)
- Do not count stutters as part of your syllables
- Use clicker/mark on paper to count stutters
- Divide # of stutters by 300 syllables (ie: 16 stutters/300 syllables = .053333)
- Multiply answer x 100 (ie: .053333 x 100 = 5.333%)
- Obtain percentage of stuttered syllables (ie: 5.3%)

Sample 1: _____%

Sample 2: _____%

Sample 3: _____%

Types of stutters used: (mark with X)

_____ Word repetitions 3x or more and rapid

_____ Interjections used as starters

_____ Syllable repetitions

_____ Sound repetitions

_____ Prolongations

_____ Blocks

_____ Multicomponents of these

Further description of stuttering: (visible tension, pitch rise, 2ndary behaviors)

FLUENCY FRIDAY PLUS: Timed Sample

Student: _____

Age: _____

Date of Sample: _____

Speaking Condition: play _____ monologue _____ conversation _____

Communication Partner: clinician _____ parents _____ peers _____

Was the student asked to use a fluency strategy prior to the sample? Yes or No

Instructions:

- Use stopwatch to time the speaking sample (1 or 2 minutes): only time when student is speaking, turn stopwatch off when student stops talking or when you talk.
- Use clicker or mark with pen # of stutters during timed period
- Divide # of stutters by # of minutes to get stuttered words per minute (swpm) (ie: 9 stutters in 2 minutes = 4.5 swpm, or 10 stutters in 1 minute = 10 swpm)

Sample 1: _____ swpm

Sample 2: _____ swpm

Sample 3: _____ swpm

Types of stutters used: (mark with X)

_____ Word repetitions 3x or more and rapid

_____ Interjections used as starters

_____ Syllable repetitions

_____ Sound repetitions

_____ Prolongations

_____ Blocks

_____ Multicomponents of these

Further description of stuttering: (visible tension, pitch rise, 2ndary behaviors)

Normative Fluency Data

Hugo Gregory: SDA (Systematic Disfluency Analysis)(see reference)

	Severity Level More Typical Types Features (LTT)	Less Typical Types (MTT)	Qualitative
Normal	< 2%	> 10%	None
Borderline	2% - 3% or > 10% of both: infrequent signs of tension more typical audible/visible types of disfluencies		
Mild	3% - 8%	10% - 15%: signs of visible audible tension; multiple stutters occurring	
Moderate	8% -15%	Greater # ; severe stuttering; audible/visible tension	
Severe	12% or more	Significantly high; audible/visible tension	

Normal Speakers

- **2 or less stutters in 100 syllables or 2 or less stutters in 1 minute speaking sample=normal.**
 - These are Less Typical Type (LTT): sound/syllable/whole word repetitions, blocks, and prolongations
 - **Or.....**
 - 8 or less disfluencies in 100 syllables = normal
- This includes the More Typical Types (MTT): interjections, revisions, phrase/word repetitions

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