

**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

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### 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

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

## Bibliography

*Andrews, G., & Cutler, J. (1974) "S-24 Scale, Stuttering therapy: The relations between changes in symptom level and attitudes." JSHD, 39, 312-319.*

*Bloom, C.M. & Cooperman, D.K. (1999). Synergistic Stuttering Therapy: A Holistic Approach. Andover, MA: Butterworth-Heinemann.*

*Brutten, G. H., & Dunham, S. L. (1989). "The Communication Attitude Test: A normative study of grade school children." *Journal of Fluency Disorders*, 14, 371-377.*

*Butler, J. & Biagini, J.(2000). "Journal Writing for Children Who Stutter". *The Stuttering Homepage ISAD Conference: Reach Out to Children who Stutter*.*

*Chmela, K. and Reardon, N. (1997). "The School-Age Child Who Stutters: Working Effectively with Attitudes and Emotions." *Stuttering Foundation of America Conference of School Clinicians, Memphis, TN*.*

*Gregory, H., Hill, D. & Campbell, J.(1996). "Stuttering Therapy Manual: Workshop for Specialists." *Northwestern University, Evanston, Ill*.*

*Healey, C., Trautman, L. and Susca, M. (2002)CALMS Rating Scale for School-Age Children Who Stutter. [www.unl.edu/fluency](http://www.unl.edu/fluency). (note: this site also contains the CAT-R)*

*Kuster, Judy. *The Stuttering Homepage*.  
[www.mankato.msus.edu/dept/comdis/kuster/stutter.html](http://www.mankato.msus.edu/dept/comdis/kuster/stutter.html).*

*Manning, W.H. (2001). Clinical Decision Making in the Diagnosis and Treatment of Fluency Disorders: Second Edition. Vancouver, Canada: Singular Publishing Group.*

*O'Brian, S., Packman, A., & Onslow, M., (2004) "Self-Rating of Stuttering as a Clinical Tool", *AJSLP*, Vol. 13, pp. 219-226.*

*Onslow, M., Packman, A. & Harrison, E. (2003) The Lidcombe Program of Early Stuttering Intervention: A Clinician's Guide. Austin, Tx. Pro-Ed.*

*Peters, T.J. & Guitar, B. (1991). Stuttering: An Integrated Approach to Its nature and Treatment. Williams and Wilkins, Baltimore, Md.*

*Shapiro, D. A.,(1999), Stuttering Intervention: Collaborative Journey to Fluency Freedom. Austin, Tx. Pro-Ed.*

*Quesal, R. and Yaruss, J.S. Assessment of Childs Experience of Stuttering (ACES). [www.stutteringcenter.org](http://www.stutteringcenter.org). (2005).*

*Reardon, N. and Yaruss, J.S. (2004). The Source for Stuttering: Ages 7-18. Chicago, Ill. Linguisticsystems.*

**Yaruss, J.S. (1998), "Real-Time Analysis of Speech Fluency: Procedures and Reliability Training." *AJSLP*, Vol. 7, No. @, pp25-37.**

**Yaruss, J.S., Max, M., Newman, R. and Cambell, J.H. (1998). "Comparing Real-Time and Transcript-Based Techniques For Measuring Stuttering", *Journal of Fluency Disorders*, 23, pp. 137-151.**

**Zebrowski, P. M. and Kelly, E.M. (2002). Manual of Stuttering Intervention. Clifton Park, NY: Singular Publishing Group.**