

## Using SALT to Assess Fluency

The coding scheme described in this document was specifically designed to mark speech disfluencies. The coding can be applied to an existing transcript, previously coded for oral language production, or a speech sample can be elicited for the sole purpose of assessing fluency. These fluency codes are flexible in nature. They can be general, just marking the occurrence of a disfluency, or further defined to add more detail. The *Analysis menu: Fluency Codes and Behaviors* report provides detailed information on the number and types of disfluent productions within the connected speech sample. This fluency report is useful, not only for initial evaluations, but additionally to track therapy progress or changes in fluency behaviors over time and/or contexts.

### Recommended codes to mark disfluent speech production

SALT contains a default list of fluency codes which may be edited to suit your purposes. They include:

- [FL] used to mark any unspecified type of disfluency
- [FLR] used to mark repetitions
- [FLP] used to mark prolongations
- [FLB] used to mark silent blocks

### Coding Unspecified Types of Disfluencies - [FL]

The insertion of the [FL] code can be used to highlight any type of disfluent production and will be tallied in analysis to provide the frequency of occurrence.

- [FL] used to mark disfluent *utterances*. Insert the code [FL] at the end of any utterance containing one or more disfluencies. The fluency report will count and display the coded utterances.
- [FL] used to mark disfluent *words*. Insert the [FL] code at the end of each disfluent word. When the [FL] code is attached to a word, with no space between the word and the code, the code indicates the presence of some type of disfluent behavior associated with that word. The fluency report will count and display the coded words with the option of also including the utterances.

Applying the code [FL] at the word or utterance level provides only the number of words or number of utterances in the sample that contained disfluencies. Using further defined codes will generate more specific results in analysis.

### Coding the Type of Disfluency – [FLR], [FLP], [FLB]

The default set of codes for SALT’s fluency analysis were developed to mark repetitions, prolongations, and silent blocks. These speech disfluencies occur at the sound, syllable, or whole-word level and are marked in the transcript using word codes, i.e., codes the disfluent words.

Select *Edit menu: Insert Code* to bring up the dialogue box “Code Lists Used to Facilitate Inserting Codes in a Transcript”. At the bottom left of the dialogue box, check the “Fluency Codes” option. The default codes are listed. The code list can be changed, or customized, and saved for future use if desired. After accepting the default list of codes, or customizing your own set of codes, click OK in the upper right corner of the dialogue box. The “Select code to be inserted” dialogue box is displayed. You are provided with options for the position of the fluency codes. The codes can be inserted at the point of the cursor in the transcript, at the beginning of a word, at the end of a word, or at the end of an utterance.

## **Basic Coding**

Basic coding involves inserting one or more codes at the end of each disfluent word within the SALT transcript. This coding option is a fast method of tallying the number and types of disfluencies produced in the language sample.

Examples:

C My <b>[FLR]</b> mom was really angry.	Repeated some or all of the word
C She like/3s banana/s <b>[FLP]</b> .	Prolonged some part of the word
C She is funny <b>[FLB]</b> .	Silent block at the beginning or in middle of the word
C The boy woke <b>[FLR][FLP]</b> up.	Sound or whole word repetition followed by prolongation.

This *basic* level, inserting codes at the end of each word, does not distinguish the position of the disfluency within the word in analysis. Nor does this level of coding indicate the number of repetitions produced or the length of a prolongation or block.

The fluency report, using the *basic* level of coding, will count the total number of [FLR], [FLP], and [FLB] codes (and/or customized codes) that were inserted in the sample. Selecting the *Analyze menu: Fluency Codes and Behaviors* report, you specify the speaker, utterance base, and whether counts are given for disfluencies within and outside mazes. You have the option of displaying the coded words, or you can expand the report to additionally display the utterances containing the codes.

Should a more detailed description be of interest, these codes can be positioned and/or expanded to provide further information as described in the following sections.

## **Indicating Position within the Word**

Inserting fluency codes at the position of the disfluency provides additional documentation. The fluency report will count the codes and display the specific words with their positional codes.

- **Repetitions:** insert the code immediately before the repeated sound or syllable. If the entire word is repeated, insert the code at the end of the word. For example,

C She like/3s <b>[FLR]</b> banana/s.	Repeated the initial sound /b/ or syllable /ba/
C She like/3s ba <b>[FLR]</b> nana/s.	Repeated the medial sound /n/ or syllable /na/
C She is funny <b>[FLR]</b> .	Repeated the whole word

### *Distinguishing between repeated sounds and syllables*

Notice, in the first two examples, that it may not be evident whether the positional code is marking a sound or a syllable. If you wish to distinguish between sounds and syllables for repetitions, expand the fluency codes by adding “Snd” for sound and “Syl” for syllable, i.e., [FLRSnd], [FLRSyl]. For example,

C She like/3s ba <b>[FLRSnd]</b> nana/s.	Repeated the sound /n/
C She like/3s ba <b>[FLRSyl]</b> nana/s.	Repeated the syllable /na/

- **Prolongations:** insert the code immediately before the prolonged sound or syllable. For example,

<i>C She is [FLP]funny.</i>	Prolonged the initial sound /f/
<i>C She like/3s ba[FLP]nana/s.</i>	Prolonged the sound /n/
<i>C She like/3s ban[FLP]ana/s.</i>	Prolonged the sound /a/
<i>C She like/3s banana/[FLP]s.</i>	Prolonged the final sound /s/

- **Silent blocks:** insert the code at the position of the block. For example,

<i>C She is [FLB]funny.</i>	Silent block at beginning of sound/word
<i>C She is fun[FLB]ny.</i>	Silent block in middle of the word, between the syllables

### **Adding Number of Repetitions**

When coding repetitions, you may want to indicate the number of repetitions. To do this, expand the repetition code by adding a colon followed by a number representing the number of extra repetitions. For example,

<i>C The [FLR:4]boy is chase/ing the dog.</i>	Repeated the initial sound /b/ four extra times
<i>C The boy[FLR:2] is chase/ing the dog.</i>	Repeated the word “boy” two extra times
<i>C She like/3s ba[FLR:4]nana/s.</i>	Repeated the sound /n/ or the second syllable /na/ four extra times

Note, in this last example, that you could differentiate between sounds and syllables by adding “Snd” for sound and “Syl” for syllable, i.e., [FLRSnd:4], [FLRSyl:4].

### **Adding Length of Prolongations and Blocks**

When coding prolongations and silent blocks, you may want to indicate their duration. Note that the duration may be measured in a variety of ways, e.g., seconds, milliseconds, numeric scale. The duration doesn’t have to be numeric. You may want to use a scale such as L=long, M=medium, and S=short. If you choose to include duration, just be consistent in how you measure it within and across your data sets. In the examples which follow, duration of prolongation is measured in number of seconds.

<i>C There are [FLP:04]many people.</i>	Initial sound/syllable was prolonged for 4 seconds
<i>C The kangar[FLP:05]oo was funny.</i>	Final sound was prolonged for 5 seconds
<i>C He like/3s [FLB:03]banana/s.</i>	3-second silent block at beginning of word

### **Coding Concomitant Behaviors**

Concomitant behaviors are secondary, or accessory, behaviors that can accompany disfluency in speech production. They vary from person to person. These characteristics are best rated at the time of elicitation, directly after, or from a video recording of the speech-language sample. Rather than code concomitant behaviors in the transcript at the point(s) where they occur, these behaviors are marked using plus lines inserted at the end of the transcript. The suggested coding is divided into the following five categories:

- **Vocal quality** such as pitch rise, vocal tic, change in volume (louder/softer), change in rate (faster/slower)
- **Grimace (facial)** such as jaw jerk, tongue protrusion, lip press, squinting, tremor of lips or face
- **Eye movement** such as avert eye gaze, close eyes, blink eyes
- **Distracting sound** such as fast or shallow breathing, sigh, whistle, blow (*air*), click, laugh, clear throat

- **Movement of extremities** such as arm movement, hand movement, hands around face, finger movement, shrug shoulders, clap, nod, shake, jerk

Select *Edit menu: Insert Fluency Template* to insert the following plus lines used to rate these five concomitant behavior categories:

- + Vocal Quality:
- + Grimace:
- + Eye Movement:
- + Distracting Sound:
- + Movement of Extremities:

Each category is rated on a 0-3 scale as follows:

- 0 = does not occur
- 1 = LOW frequency of occurrence
- 2 = MEDIUM frequency of occurrence
- 3 = HIGH frequency of occurrence