

RUNNING HEAD: Functional Spontaneous Speech Phenomena

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The word *fluency* is used in a variety of settings, including stuttering research, spontaneous speech research of non-stutterers, bilingual research, and in the domain of public speaking. While many would agree that some language productions are fluent (e.g., a political leader's inaugural address) and others are not (e.g., the speech of someone who stutters or someone who has trouble translating between languages), pinpointing one type of talk as fluent and another as not can be challenging.

For example, people with Wernicke's aphasia, who produce properly formed sentences with appropriate melody and no disruptive pauses, are considered fluent, while people with Broca's aphasia, who produce meaningful statements but in a telegraphic start-and-stop style rife with long pauses, are considered disfluent (Carroll, 2004). Auctioneers and sportscasters who use stock phrases to fill gaps in speech are also considered fluent, because they are maintaining a continuous speech stream (Kuiper, 1996). In these literatures, fluency has nothing to do with the meaning conveyed or ease of understanding (the messages of people with Wernicke's aphasia are often incomprehensible; rapid auctioneers can be indecipherable to unfamiliar listeners). On the other hand, the meaning conveyed by the speaker is central to the concept of fluency in the bilingual research literature (e.g., Demie & Strand, 2006; Grosjean, 1998).

Another way to think about fluency is the production of speech in the absence of disfluent elements. Disfluent elements traditionally include *ums* and *uhs*, repetitions, restarts, and *discourse markers* (words like *you know*, *well*, *I mean*, and *like*); the old-fashioned label *hesitation phenomena* highlights their seeming superfluity (Levin & Silverman, 1965; Maclay & Osgood, 1959). In spontaneous speech studies, researchers

often define fluency as the number of uses of disfluent elements per some standard, such as 100 words (Bortfeld, Leon, Bloom, Schober, & Brennan, 2001; Broen & Siegel, 1972); the higher the frequency, the less fluent the speaker. Falling into this definition of fluency is the advice of public speaking counselors who advocate substituting disfluent elements with pauses in order to improve fluency. In contrast to discussions of the speech produced by individuals with Broca's aphasia, in at least some public speaking realms, adding pauses increases fluency.

So, one view of fluency focuses on stops and starts, and another on purportedly unimportant words added to the speech stream. These categories may be interrelated. For example, *ums* and *uhs* are related to the amount of upcoming pausing (Smith & Clark, 1993; Clark & Fox Tree, 2002), and nonstuttered repetitions can be seen as a way of restoring fluency after a break in speaking (Clark & Wasow, 1998). A functional approach to hesitation phenomena considers whether there is any usefulness to different phenomena for the speaker or the addressee. This view stands in stark contrast to the common belief in the unimportance of these elements (Fox Tree, 2007). In a survey of attitudes towards *um*, *uh*, *you know*, and *like*, the majority of respondents believed these words were negligible or detrimental to comprehension, and only 4% of respondents entertained the possibility that they helped (Fox Tree, 2007).

One functional approach to hesitation phenomena takes as the starting point the concept of two tracks in speaking (see Clark, 1996, for review). In Track 1, speakers convey the propositional content of their messages. In Track 2, they comment on the information in Track 1, for a variety of purposes. For example, speakers may indicate to addressees the information to be highlighted, or that there is going to be an upcoming

temporary delay in speech production. People have a number of Track 2 tools, or *collateral signals*, available to them for commenting on Track 1, including *inserts* (words such as *um*, *you know*, and *oh*), *juxtapositions* (providing information by the way talk is presented; for example, the speaker indicates a change by abutting “he said that” with “he asked if”), *modifications* (changes in the production of speech such as prolonging syllables), and *concomitants* (other information conveyed at the same time as speech, such as facial expressions and manual gestures; Clark, 2004). This leads to a third way of thinking about fluency: the number of words strung together in a valid grammatical string without (non-rhetorical) pauses, prolongations, or other indicators of trouble. That is, instead of counting the number of hesitation phenomena per 100 words, researchers would count the number of fluent strings per 100 words, or the average length of a fluent string. This definition of fluency is not commonly evaluated in the psycholinguistic literature.

Paying attention to Track 2 phenomena may require greater addressee resources, disrupting processing in comparison to speech that is free of collateral signals. There is psycholinguistic evidence that some traditional hesitation phenomena do in fact disrupt speech processing, as is predicted by approaches that treat them as undesirable. For example, false starts in the middle of utterances slow listeners’ abilities to recognize upcoming words in a speech stream (Fox Tree, 1995). But there is also evidence that other phenomena do not disrupt processing. Fox Tree (1995, 2001) found that repetitions, *ums* and *uhs*, and false starts at the beginning of utterances do not slow listeners’ processing times.

The functional approach to spontaneous speech phenomena suggests that there should be occasions when inserts, juxtapositions, modifications, and concomitants are helpful to comprehension. And there is evidence for this in the research literature. With respect to inserts, hearing *uh* sped people's abilities to recognize upcoming words (Fox Tree, 2001). Hearing a prolonged *the* and an *uh* affected listeners' interpretations of what the speaker was about to say, making listeners look at discourse-new objects over discourse-old objects in an array (Arnold, Fagnano, Tanenhaus, 2003). Hearing *oh* assisted people in making sense of what was heard (Fox Tree & Schrock, 1999). Reading *well* changed the way people interpreted replies (Holtgraves, 2000). Hearing *like* affected how people retold stories (Fox Tree, 2006). Hearing discourse markers as a group improved lecture learning (Flowerdew & Tauroza, 1995; Tyler 1992).

With respect to modifications, people prolonged words to indicate upcoming delay (Fox Tree & Clark, 1997). People also indicated sarcasm by modifying their voices, and listeners used that information (Bryant & Fox Tree, 2002). Hearing emphasized words affected how listeners maintained concepts in memory (Gernsbacher & Jescheniak, 1995). Hearing emphasized words also affected how people used concepts in continuing other people's stories; they referred to concepts more in their completions when the concept was stressed (Jescheniak, 2000).

Regarding concomitants, facial cues and gestures helped second language learners understand lectures (Sueyoshi & Hardison, 2005). Gestures also affected how addressees retold stories; holding the speech heard constant, people retold stories differently depending on the gesture they saw (Cassell, McNeill, & McCullough, 1999). Listeners

interpreted manual emphasis gestures, head nods, and eyebrow raising as highlighting the important parts of an utterance (Krahmer & Swerts, 2006).

Because they are not part of the primary content of the message, collateral signals can seem like they are ignorable parts of speech. They are frequently lumped together (see Fox Tree, 2006, regarding grouping of *like*, *um/uh*, and *you know*) and stigmatized (Fox Tree, 2007; Watts, 1989), and people are generally unaware of their own frequency of use (Broen & Siegel, 1972; Watts, 1989). The contrast between the uselessness and the usefulness of collateral signals is highlighted by the differing attitudes towards native speakers' use versus non-native speakers' use. Native speakers who use a lot of fillers and discourse markers are considered to be disfluent, or at least inept (Fox Tree, 2006; 2007), but anecdotal observations suggest that the use of the same words by non-native speakers heightens the appearance of fluency. For example, the author, when living in the Netherlands, inserted Dutch discourse markers into her Dutch speech and discovered that interlocutors responded by assuming she had greater proficiency than she had. This connection has some validity; more proficient second language users use more discourse markers in their second language (Hellermann & Vergun, 2007).

The resolution of this seeming conundrum rests in the functional perspective. People are bound to make adjustments as they are speaking. For example, they may forget to say something, want to express something differently, or experience production problems. Collateral signals help addressees navigate these natural events in spontaneous speech. Saying *ums* (or other signals) *are bad* is like saying *hazard lights are bad* when seeing the hazard lights of illegally parked cars. The problem is the illegal parking, or the lack of available valid parking, not the use of the lights. Removing collateral signals

would only remove the messages people use to accommodate the challenges of speaking spontaneously, not prevent people from experiencing those challenges. So, when native speakers produce a signal such as *um*, listeners sometimes are bothered by the problem that gave rise to the *um* (for example, the delay in getting information from the speaker in a timely manner). At the same time, people recognize that *um* means something, and that its use is not random (Fox Tree, 2007). This means that people also recognize the expertise possessed by a second language learner who masters the use of these signals.

The types of spontaneous speech phenomena produced by stutterers may vary from those produced by nonstutterers, such as the prolongation of sounds at the beginnings of words. It's possible that the phenomena produced by stutterers are reacted to differently from those produced by nonstutterers (cf. Susca & Healey, 2002). For example, severe stuttering on content-important words can reduce information recall (Cyprus, Hezel, Rossi, & Adams, 1984). At the same time, it's surely the case that spontaneous speech phenomena that are thought of negatively can play beneficial roles in addressee comprehension. This knowledge may assist stutterers whose worry about their fluency increases their stuttering (cf. Hulit, 1989).

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Continuing Education Questions

1. *Ums* and *uhs* are
- classic examples of disfluencies that disrupt processing.
 - classic examples of dysfluencies that disrupt processing.
 - utterances that may benefit listener comprehension.
 - the same as silent pauses (*filled pauses*).

ANSWER: c

2. Across research literatures, the word *fluency*
- means speaking in a continuous speech stream.
 - means speaking without stops and starts.
 - means speaking so that one is audible.
 - means different things to different people.

ANSWER: d

3. Discourse markers are words like *well*, *I mean*, and *oh*. Research suggests that they are
- best left unsaid.
 - useful in spontaneous talk.
 - useful only under special impression management circumstances.
 - indistinguishable; for example, one speaker prefers *well*, another *oh*.

ANSWER: b

BIOGRAPHICAL STATEMENT:

Jean E. Fox Tree is a cognitive psychologist at the University of California Santa Cruz. She specializes in spontaneous speech production and comprehension, including bilingual communication.