Disfluencies in Spoken Language

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Definition: how phenomena that cause a break in the smooth flow of talk affect speaking and understanding

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Content List: Categories of Disfluencies, Disfluencies in Language Production, Disfluencies in Language Comprehension

Background Information: Everyone who talks produces disfluencies. Forty years of research have provided a good understanding of the types of disfluencies people produce, and a beginning understanding of why disfluencies occur and how they impact addressees.

Categories of Disfluencies

Disfluencies are any of a group of phenomena that cause a break in the smooth flow of spoken talk. Three main categories of disfluencies are (1) pauses, (2) ums and uhs, and (3) repetitions, replacements, and restarts, although there are others (Adams, 1982; Clark & Wasow, 1998). Disfluencies are normal nonfluent speech, as opposed to dysfluencies, or abnormal nonfluent speech, such as stuttering (Wingate, 1984).

A pause is a stretch of speech that is heard as silence. Pauses are usually identified as times when the speaker is not saying anything, but they may also be heard when there is no actual silence in the speech, but rather a slowing down of tempo (Duez, 1993; Martin, 1970). Traditionally, only silences over a quarter of a second long were considered meaningful breaks in talk (Goldman-Eisler, 1968), but some have argued that pauses over a tenth of a second long should form the lower cutoff point (Hieke, Kowal, & O'Connell, 1983). Most pauses in spontaneous talk are under one second long (Jefferson, 1989); in fact, pauses over three seconds have defined conversational lapses (McLaughlin & Cody, 1982). Pauses have been further categorized by their position in the clause, such as whether they are within or between sentences, or their purpose, such as whether or not they are produced for rhetorical effect (Deese, 1980; Duez, 1982; Martin & Strange, 1968). Although only a subset of pauses may be disfluent pauses, it can be hard to determine whether a pause is a disfluency or not.

Ums and uhs describe a group of sounds that sound, in English, like /um/ and /uh/, with some variation in the shape of the vowel (/em/ and /eh/, for example). They are sometimes referred to as fillers or filled pauses (Clark & Wasow, 1998; Fox Tree, 1995; Maclay & Osgood, 1959; Shriberg & Lickley, 1993). These labels descend from historical comparisons between unfilled pauses (pauses) and filled pauses (ums and uhs; Maclay & Osgood, 1959). Ums and uhs
were thought to be ways to fill silence to show that a speaker intends to continue speaking (Cook, 1971). But this theoretical position has not held up over time. To avoid the implication that *ums* and *uhrs* are equivalent to or alternative versions of silent pauses, some researchers identify them only as *ums* and *uhrs*, or use the label *interjection* (James, 1972, 1973; Fox Tree, in press). Instead of being equivalent to pauses, *ums* and *uhrs* indicate the lengths of upcoming pauses, with *ums* indicating major pauses and *uhrs* minor pauses (Clark, 1994; Clark & Wasow, 1998; Smith & Clark, 1993).

Repetitions, replacements, and restarts are stretches of speech where people have (1) stopped the smooth flow of speech, (2) possibly uttered a pause, *um* or *uh*, or other words such as *I mean* or *you know*, and (3) resumed their talk (Clark, 1996). In repetitions, words are repeated exactly in the resumption, as in “of her of her daughter.” In retracings, some words are repeated but some are changed, as in “there were a lot of tricks that the um tricks and toys that the ant could play with.” In restarts, no words are repeated, as in “what would you- can I help you?” (all examples from Fox Tree, 1995). Although people can detect problems that need correcting after hearing themselves start to say something wrong (Levelt, 1989), people can also choose in advance when they will suspend their speech, detecting problems while speaking and suspending their speech when they have the continuation ready (Blackmer & Mitton, 1991; Fox Tree & Clark, 1997). People also choose how to resume fluent talk, resulting in various retracings.

The part of speech that is stopped is sometimes called the *reparandum*, and the part of speech that is resumed is sometimes called the *repair* (Levelt, 1983). The term *repair* has also been used to refer to repetitions, replacements, and restarts as a group along with similar phenomena (Fox Tree & Clark, 1997). But the term repair can imply the revising of something said earlier, which is not always the case for these disfluencies. For example, repetitions can be viewed as early commitments to speaking at particular moments with subsequent restorations of continuity in the resumption (Clark & Wasow, 1998), instead of as second occurrences’ revising without changes first occurrences.

The three types of disfluencies discussed here -- pauses, *ums* and *uhrs*, and repetitions, replacements, and restarts -- are interrelated. Pauses can predict upcoming repetitions, replacements, and restarts (Levelt, 1989). *Umns* and *uhrs* indicate the lengths of upcoming pauses (Clark, 1994). And information between the suspension and resumption of repetitions, replacements, and restarts can contain pauses or *ums* and *uhrs* (Clark, 1996). In addition, different types of disfluencies may trade off with one another (Deese, 1980; Maclay & Osgood, 1959).

**Disfluencies in Language Production**

Since at least the 1960’s, disfluencies have been seen as windows into the speech production process. They could be the auditory remains of a problem in turning thoughts into words, or they could be the normal result of speakers’ planning their talk. Hypotheses about disfluencies’ etiologies or purposes were arrived at by analyzing when they occurred.

Hypotheses about pauses were that they were epiphenomena of a general need for more processing time to produce talk (Levelt, 1989), or the result of more specific effort at lexical access (Goldman-Eisler, 1968; Maclay & Osgood, 1959; Martin & Strange, 1968), syntactic formulation (Brotherton, 1979; Clark & Wasow, 1998; Duez, 1982; Ferreira, 1991; Maclay & Osgood, 1959), or phonological encoding (Ferreira, 1991). Pauses were also thought to be used more purposefully for rhetorical effect (Duez, 1982; Kowal, Bassett, O’Connell, 1985), such as making people appear sincere (Maclay & Osgood, 1959). Pause placement also influenced
hypotheses about the order of speech production processes, such as that syntactic formulation precedes lexical access (Maclay & Osgood, 1959).

Similar hypotheses were made about *um* and *uh* sounds. Without distinguishing between proposals that they are symptoms or signals, *um* and *uh* sounds have been thought to foreshadow (1) general speech production difficulty (Brotherton, 1979; Reynolds & Paivio, 1968) or specific difficulty, such as upcoming delays (Clark, 1994) or error avoidance (Jefferson, 1974), (2) particular kinds of words, such as difficult to produce or unpredictable words (Brotherton, 1979; Tannenbaum, Williams, & Hillier, 1965) or words with more competitors (Schachter, Christenfeld, Ravina, Bilous, 1991), (3) the major chunks of talk in a discourse (Swerts, 1998), (4) difficulty in planning what one wants to say and how to say it syntactically (Maclay & Osgood, 1959; Martin & Strange, 1968; Reynolds & Paivio, 1968), (5) speakers’ desires to maintain control of the floor in a conversation (Maclay & Osgood, 1959), and (6) speakers’ desires to show awareness of upcoming delays, to avoid being cast in a negative light by a silent pause (Smith & Clark, 1993).

Repetitions, replacements, and restarts in speech production come about because of a variety of problems, including conceptualizing ideas, formulating sentences, selecting words, or articulating utterances (Levelt, 1989). Different types of production trouble may yield different kinds of recovery (Tannenbaum, Williams, & Hillier, 1965). One explanation for the reason repetitions, replacements, and restarts look the way they do is that speakers follow rules for making them well-formed (Levelt, 1983; 1989). They are well-formed if there is a way of converting the suspended talk and the resumption into a coordination (Levelt, 1983); for example, because “there were a lot of tricks that the ant could play with” could be filled out to the well-formed sentence “there were a lot of tricks that the [ant could do, and] um tricks and toys that the ant could play with,” the replacement without the bracketed talk is well-formed.

**Disfluencies in Language Comprehension**

Fewer researchers have explored the role of disfluencies in speech comprehension. Disfluencies can be difficult to detect in talk, although listeners can detect them with effort (Martin, 1967; Martin & Strange, 1968). Detection of pauses may depend on where in the clause they fall; one study found within clause pauses can be detected if they are over 200 ms, but between clause pauses need 500 ms to 1000 ms for detection (Boomer & Dittmann, 1962). Detection of *um* and *uh* varies depending on whether listeners are paying attention to what speakers are saying or how they are saying it (Christenfeld, 1995). Detection of repetitions and restarts takes place after the smooth flow of speech has stopped (Lickley & Bard, 1998).

Nonetheless, effects of disfluencies on comprehension have been measured. There are generally two different measurement techniques, those that involve off-line tasks (measuring comprehension after speech has been heard) and those that involve on-line tasks (measuring comprehension while speech is being heard).

In off-line tasks, disfluencies have influenced what listeners think about a speaker’s personality. For example, pauses can make a conversationalist appear less facile (McLaughlin & Cody, 1982), and also have implications for interpretations of what the speaker does or does not know (Brennan & Williams, 1995). Saying *um* can make people who know the answer to a question appear less sure of their answer, or give the appearance that someone who doesn’t know the answer really does know it (Brennan & Williams, 1995). *Um* sounds can also make people appear
more relaxed compared to speech with the *ums* replaced by pauses, although pauses make people appear less relaxed than no pauses (Christenfeld, 1995). Off-line tasks have also demonstrated that pauses can aid in syntactic disambiguation (Price, Ostendorf, Shattuck-Hufnagel, and Fong, 1991), and, if placed at syntactic boundaries, can improve recall of the gist of sentences (Reich, 1980). *Ums* and *uhs* can provide turn-ending or turn-continuation information, depending on whether they fall at grammatical or ungrammatical points (Cook & Lalljee, 1970).

In on-line tasks, disfluencies have been shown to produce a variety of effects. *Uhs* speed up the recognition of upcoming words in sentences but *ums* don’t, a result that can be attributed to their differing roles in anticipating the lengths of upcoming pauses (Fox Tree, in press). Attention may be heightened after hearing an *uh* in anticipation of the short upcoming pause and continuation, but it may not be after *um* because of the indeterminacy of the upcoming delay. Repetitions do not negatively affect recognition of subsequent words (Fox Tree, 1995), as would be expected if repetitions are a solution to a fluency problem as opposed to an error (Clark & Wasow, 1998). But certain kinds of restarts, those altering information mid-sentence, do slow recognition (Fox Tree, 1995). Restarts are only costly when listeners need to store information about one part of the discourse record while making the correction (Fox Tree, 1995). Information between the suspension and resumption can help listeners follow the speaker successfully (Fox Tree & Schrock, 1999).

**References and Bibliography**


Glossary

pause: a stretch of speech that is heard as silence
ums and uhs: a group of sounds that sound, in English, like /um/ and /uh/, with some variation in the shape of the vowel
repetition: a speech disfluency where words are repeated exactly in the resumption after speech has been stopped
replacement: a speech disfluency where some words are repeated but some are changed in the resumption after speech has been stopped
restart: a speech disfluency where no words are repeated in the resumption after speech has been stopped
reparandum: in a repetition, replacement, or restart, the part of speech that is stopped
repair: in a repetition, replacement, or restart, the part of speech that is resumed; also a category label for repetitions, replacements, and restarts as a group
filled pause: see ums and uhs
unfilled pause: see pause
disfluency: any of a group of phenomena that cause a break in the smooth flow of spoken talk
dysfluency: abnormal nonfluent speech

Further Reading