The Role of Fluency in Taking Pauses while Reading Aloud and During Spontaneous Speech

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Abstract: In this paper, the concept of pause patterns is analyzed within two aspects of speech, namely reading aloud and spontaneous speech. While reading aloud, much of the planning gets done by the speaker in preparing the text. As a result, the speaker becomes more fluent and does not need to take pauses (except at grammatical junctures). However, during spontaneous speech, pauses are much longer than reading and often more frequent because of hesitation aloud which results in disfluencies, false starts, repetition, and so on. This study explores the pause patterns in reading and spontaneous speech. The participants of this study consisted of 8 undergraduate students at Mehran University of Engineering and Technology. Data was collected through recording the students reading aloud and giving spontaneous speeches. The collected data was then analyzed. The results of the analysis showed that there is not much difference in the pattern of pauses while reading aloud and during spontaneous speech for those who are fluent in English.

Keywords: Reading aloud; Spontaneous speech; Non-native speakers; Delimitative pauses; Physiological pauses; Fluency

1. Introduction

It is common to take pauses while talking about different ideas. Pauses are silences between sentences while transitioning between different ideas. In this study, a pause was considered when the speaker stayed silent for more than 2 seconds. Pauses provide insights into the thought process and preparation involved in speech. When people read aloud, much of the planning occurs beforehand as they prepare the text. Fluent speakers, having already planned their speech, pause at grammatical junctures while reading because they no longer need to pause for planning purposes. In a spontaneous or less prepared speech, the level of planning needed may differ. The variations in planning requirements are reflected in the number and distribution of pauses in speech.

The concept of reading aloud can be compared to that of spontaneous speech based on pausing and sentence structure. In reading aloud, pauses and other hesitation types typically interrupt sentence constituents. Spontaneous speech tends to have longer and more frequent pauses compared to reading aloud, although it may also include short pauses. These differences also reflect the disparities in the planning involved in these two tasks. When speakers read a prepared passage aloud, they need to plan when to take pauses to mark the

text's structure and to take a breath. They must also organize how they articulate the speech sounds that form the words. This process involves recognizing the word in its written form, determining how to pronounce it, and coordinating the movements of various muscles to produce the sounds. Therefore, it is not a trivial task. In spontaneous speech, they must perform all the tasks mentioned above and more. This is because they also need to decide what they want to say and how to express it using words and sentences.

As compared to reading aloud, spontaneous speech involves more planning, so it consists of more and longer pauses. In spontaneous speech, various forms of hesitation are common, and overall fluency is often lacking. A significant amount of hesitation at the introduction of a new idea indicates that the expression of this idea has not been preplanned and needs to be formulated on the fly once it has been initiated [1]. Spontaneous speech tends to include a higher frequency of self-interruptions, false starts, and other errors. Furthermore, during spontaneous speech, individuals frequently find themselves in the process of evaluating what they are saying and making judgments that a better or more appropriate way of conveying their point exists [1].

However, this study suggests that fluency plays a role in reducing the number of pauses, even in spontaneous speech, similar to the fluency observed in reading aloud.

2. Literature review

Previously, research has indicated a link between pauses in spontaneous speech and various measures of cognitive performance within the speech sample [2]. It is noteworthy that pause patterns may mirror the processes of conceptualization. For instance, when examining speaking and pausing patterns related to ideas, it is common to find that each concept involves significant pauses in its initial stages, and as it progresses, the pauses decrease, giving way to more continuous speech [3].

One of the most informative and complex elements of fluency investigated so far is in the area of pause phenomena. Studies have been conducted on two of the aspects of pauses, namely frequency and placement. A study suggests that certain aspects of pausing, particularly where pauses are located, can provide valuable insights into the nature of fluency. Comparing pauses and fluency in reading and spontaneous speech has yielded significant findings. Lennon studied alterations in the timing of pauses of four English students from Germany. He found that the time of all unfilled pauses was on average 25% less than the timing of the entire speech in three of four subjects [4].

Riggenbach examined the presence of the speech of four Chinese learners of English for the presence of filled and unfilled pauses. The findings showed that the frequency of unfilled pauses was an important discriminator between subjects rated as highly fluent and the subjects rated as less fluent [5]. Freed also explored the filled and unfilled pauses in the speech of American learners of French. In his investigation, he contrasted students who studied overseas for a semester with those who remained in the United States. She discovered some variations between the less fluent and the fluent group. She concluded that the students who were fluent in French paused less, with shorter pauses and less unfilled pauses [6].

Riggenbach conducted a study on the speech patterns of six Chinese students who were learning English. The focus of the study was on their pause patterns, and the findings offered valuable insights into fluency. It was suggested that the perceived fluency of certain participants was notably influenced by where they placed their pauses. The strategic placement of pauses at grammatical junctures seemed to play a crucial role in how fluency was perceived [6].

What can we learn about fluency from the data on pause frequencies and durations? It seemed that fluency is somewhat influenced by the length and frequency of filled and empty pauses. Similarly, pause placement also plays a role in fluency. The speakers of a second language who are highly fluent as well as the native speakers

take pauses at the end of a sentence and in grammatical junctures. In contrast, a person would be perceived as not fluent if the pauses are taken elsewhere.

This study aimed to investigate the factors influencing speech fluency, particularly the role of pauses in speech patterns. An analysis of speech samples was conducted to assess how choices related to both content and delivery influenced the frequency, duration, and placement of pauses. It was observed that the majority of pauses, except for a few exceptions, occurred at grammatical junctures. This finding was attributed to the fluency exhibited by speakers, whether during reading or spontaneous speech, and highlighted the importance of these junctures in maintaining fluency.

3. Methodology

3.1. Locale of the study

The subjects of the study were undergraduates of Mehran University of Engineering and Technology. The research examined pause patterns in reading aloud and spontaneous speech, it was conducted under identical environmental conditions.

3.2. Participants

There were eight participants in this experiment. All of them were undergraduate students of Mehran University of Engineering and Technology, with English as their second language.

3.3. Design

In both tasks, the participants' pause patterns were analyzed. In task 01, a specific passage was presented to one group of participants for a set period, allowing them to prepare for reading. In task 02, the same passage was shown to another group of participants, but they had to speak spontaneously. Consequently, all participants read the same passage, and their voices were recorded during both reading and spontaneous speech.

3.4. Experiment

The subjects were required to read a passage of 260 words from a research paper on Minsky's Schema Theory and also give a spontaneous speech, and they were recorded. The recordings were of sufficient quality for the patterns of pauses to be recognized and noted. The pause patterns were marked on the text according to the recordings. The passage used for spontaneous speech exhibited a relatively similar pattern of pauses with corresponding ratios of silence and speech, except for a few pauses. These specific pauses in spontaneous speech were examined to determine their causes. The analysis of prose readings followed a similar approach. It was observed that the slight changes in slope during reading were somewhat smaller in magnitude compared to those occurring in spontaneous speech.

Table 1. Distribution of pauses on the basis of physiological and non-physiological pauses

Types of pauses	Reading	Spontaneous speech	Total
Non-physiological pauses	2	8	10
Physiological pauses	19	27	46
Total Number of Pauses	21	35	56

4. Results and discussion

Pauses in both readings and spontaneous speech were identified and categorized based on whether they occurred at grammatical or non-grammatical junctures in speech. The following categories were established for this classification:

(1) Pauses at grammatical junctures

  (i) At the end of a sentence.

  (ii) Before conjunctions, whether they are (a) coordinating, such as "but," "and," "neither," and "therefore," or (b) subordinating, for example: "if," "when," "while," "as," and "because."

  (iii) Before interrogative and relative pronouns, for example: "what," "why," "who," "whose," and "which."

  (iv) Before adverbial clauses of time (when), style (how), and location (where).

  (v) Before parenthetical references.

(2) Pauses at non-grammatical junctures

  (i) At the middle or end of a phrase, for example: "To process information *pause* with the use of a *pause* schema…."

  (ii) At the repetition of words or phrases, for instance: (a) "The basic idea is that *pause* that the schemata are data structures." (b) "None of them ever captured *pause* ever captured all of the qualitative characteristics…."

  (iii) At false starts where the structure of the sentence is disrupted e.g. "Rumelhart chose a representation for the schema *pause* although the generativity of the rewritten rules….

  (iv) At retracing as a result of wrong pronunciations e.g. (a) "Somehow none of them has never *pause* has ever really been adequate." (b) A notation rich in generative capacity, namely, the rewritten rules for negative *pause* for generative linguistics.

  (v) At the middle of the verbal compound, for example: "Schemata is *pause* supposed to be a generative thing…"

The total number of pauses was categorized according to the above classification as depicted in **Table 2**. In reading, approximately 94.7% of the breath-taking pauses occurred at grammatical junctures, while the remaining 5.26% were non-grammatical pauses. Similarly, in spontaneous speech, 62.9% of pauses were taken at grammatical junctures, and roughly one-third of the breath pauses (37%) were recorded at non-grammatical junctures. The 37% of pauses occurring at non-grammatical junctures do not appear randomly but rather follow a structured pattern throughout the speech. These pauses occur during periods of hesitancy, as mentioned above as pauses at non-grammatical junctures.

A distinct pattern was observed in the pauses made during these alternating sections of hesitation and fluency. The percentage of pauses taken during hesitation or planning at grammatical junctures (48.57%) was somewhat lower compared to the percentage during fluency periods (51.4%).

Table 2. Distribution of physiological pauses on the basis of grammatical and non-grammatical junctures

Types of psychological pauses	Reading	Spontaneous speech	Total
Delimitative pauses at grammatical junctures	18	17	35
Physiological pauses at non-grammatical junctures	1	10	11
Total	19	27	46

5. Conclusion

The findings from the study highlight that two aspects of speech production, reading and spontaneous speech, are characterized by the fluency of the speakers. **Table 2** demonstrates that during reading, pauses were exclusively taken at grammatical junctures, indicating that the speech gaps for pausing are determined by the language's syntactic structure. Furthermore, pauses accounted for 41.3% of the gaps in reading, while they constituted 58.69% in spontaneous speech. In other words, 58.69% of the gaps in spontaneous speech were pauses of hesitation, whereas the percentage of hesitation gaps in readings was 41.3%. The notable difference in these percentages suggests that the purpose of pauses in reading differs from that of pauses in spontaneous speech. However, it is important to note that the fluency of the speakers was responsible for fewer pauses, even in spontaneous speech, with only a small difference compared to reading aloud. These results contribute significantly to our understanding of fluency, indicating that fluent speakers tend to take fewer pauses in their speech. This area could benefit from further research in the future.

Disclosure statement

The authors declare no conflict of interest.

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