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ON THE ROLE OF PAUSES – A QUALITATIVE AND QUANTITATIVE ANALYSIS OF SELECTED POLITICAL SPEECHES IN THE EUROPEAN PARLIAMENT

Abstract: This paper presents an analysis of speech pauses occurring in selected political speeches, with a focus on both filled and silent types. The paper aims to highlight differences among pause categories in spoken language and assess potential gender differences. By analyzing speeches from male and female speakers in specific syntactic contexts, the paper reveals limited variations in fundamental frequency and pause duration. While certain subcategories exhibit slight differences in frequency, consistent patterns are lacking.
Findings indicate that filled, hesitation, politeness, and perturbation pauses tend to be longer, whereas specification and personal stance pauses tend to have lower frequencies. Enumeration, opposition, and segmenting pauses strategically support a speaker's point, aligned with sentence structure. Investigating fundamental frequency trends before pauses demonstrates that a decrease in frequency signifies unit culmination, while an increase suggests non-final positions within units.
The paper concludes that disparities exist among pause types, though differences between male and female speakers are generally minor. This emphasizes the need to consider multiple factors, including duration, frequency, and syntactic context, for comprehensive pause definitions. Overall, the paper provides insight into speech pause attributes, variations, and their significance in conveying meaning, thus enriching our understanding of speech patterns and communication strategies.

Key words: duration, fundamental frequency, pause types, speech

1. Introduction

In the realm of spoken language, the role of pauses often goes unnoticed, yet their significance in shaping our communication cannot be overstated. One may consider previous theories of linguists who have examined this phenomenon to better understand their influence on speech. In the following sections, we will

discuss and compare the characteristics of different types of pauses within speech. These proposed pause types are derived from a combination of our own perceptual analysis of political speeches given within the European Parliament and linguistic theories. Through our perceptual analysis, with a focus on their specific function within speeches, we aim to distinguish pause types and provide them with their own qualitative and quantitative characteristics.

This paper begins with a synthesis of relevant theories on the definition, classification, and function of pauses. This lays down an objective theoretical foundation for the subsequent presentation of the research results. It continues with an exploration of filled pauses. Within this category, subcategories of pauses, including pauses of hesitation, pauses filled with prolonged syllables, repetition, and correction are further investigated. An individual section has been dedicated to silent pauses, where subcategories of segmenting pauses, highlighting pauses, pauses for elaboration, personal stance pauses, opposition pauses, hypothetical/conditional pauses, enumeration pauses, politeness pauses, and perturbation pauses are discussed.

The aim of this paper is to highlight the diversity of pauses in a corpus of selected English and French political speeches delivered at the European Parliament The corpus was designed to objectively represent speakers of different genders, age groups and backgrounds.

2. Definition, classification and function of the pause

The concept of the pause has been studied by various linguists, each offering their own insights. Through an analysis of the relevant literature, it is intended to distill common attributes of pauses to propose a novel comprehensive theory for this research.

According to Danielle Duez (1999), a pause is the silence following activity, marking an interruption in sound. Mehmet Kilic (2013) defines it as a silent interval between meaningful vocalizations, while Kristina Lundholm Fors (2015) distinguishes a pause from silence, defining it as a conversational interruption within a speaker's turn.

Defining pauses proves challenging due to their diverse nature. Instead of a universal definition, linguistic literature presents various pause categories. It could be said that a pause is a momentary break within an utterance, either silent or with audible speech sounds. Pauses are categorized as unfilled (silence) or filled (repetitions, interjections), marking a perceptual distinction.

Linguists classify pauses based on different criteria to understand their role and significance beyond breathing. Danielle Duez (1999), for example, focused on the stylistic function of pauses in order to propose her classification. Firstly, she proposed two overarching categories: silent pauses and filled pauses. Duez then divided the filled pauses into repetitions, false starts, prolonged syllables. Silent

pauses are purely silent according to her. In contrast, Nekvapil and Mullerová (1988) proposed a classification focused on the function of pauses and defined these as: syntactic pauses, formulation pauses, emphatic pauses and contact pauses.

A new approach to pause classification is taken here, considering both their location and function. Location-wise, pauses are categorized based on their occurrence: at the beginning, end, between words, or within a word. Functionally, pauses serve physiological, grammatical, pragmatic, and hesitation functions. These often coexist, influenced by context and prosody.

A functional classification commonly overlooks usage specifics. The challenge lies in multifunctionality. Barbara Ahrens (2007) identified various individual pause functions, while Duez (1982) highlighted multiplicity within a pause. Authors commonly agree on physiological, syntactic, and stylistic functions. Yet, a single pause serves diverse functions, hampering a universally applicable definition.

3. Methodology

Having consulted the theories of linguists such as Duez, Fors, Kilic and others, and keeping the aim of this research in mind, the choice of material led us to an examination of speeches delivered to the European Parliament. The substantial volume of daily speeches provided the possibility to carefully select speeches given in English and French that were deemed relevant. This approach enabled the creation of a corpus that represents a diverse range of demographics, including various age groups, genders, and more.

The selection was narrowed down to encompass speeches delivered within a specific timeframe, spanning from July 2, 2019 to January 31, 2020. July 2 marked the induction of new members into the European Parliament, and January 31 corresponds to the official departure of the United Kingdom from the European Union. Subsequent to this date, speeches by native English politicians are unavailable, leading to the decision not to use French speeches given beyond January 31.

In pursuit of objectivity in representation, the decision entailed the selection of two MEPs representing the United Kingdom per region – one female and one male. In summary, analysis of English data encompassed a total of 24 politicians. Amongst this group, 13 are female, while 11 are male (with one region exclusively represented by women). For French MEPs, a selection of 24 MEPs was made – 12 male and 12 female representatives. These decisions were made to help maintain a genuine representation across various age groups, mirroring the natural distribution.

For the corpus, one speech per politician was selected with a length spanning between one to two minutes. Together, 48 different speeches in English and French were selected (a total of 50 minutes and 15 seconds of speeches).

The pauses were identified manually, then marked on a graph with the help of Speech Analyzer software. This choice is supported by the fact that solely relying

on sound editors could potentially lead to the omission of filled pauses. The minimal duration of the pause was set to 100 ms for the purposes of the research, which aligns with Heldner (2011) and Oehmen et al. (2010), who suggest that minimal length of the pause which may still be detected is 120 ms and 130 ms, respectively.

The total number of pauses amounted to 1084 (across both languages). English speakers employed 561 pauses in total (with 411 employed within sentences), and French speakers employed 523 pauses in total (with 376 employed within sentences). Having identified all the pauses in the corpus, the perceptual analysis of the material was conducted. Through the perceptual analysis, with a focus on the preceding and following context of each occurrence of a pause, specific categories were assigned. These categories are filled pauses and silent pauses, including segmenting pauses, highlighting pauses, pauses for further specification, pauses of personal stance, pauses of opposition, hypothetical and conditional pauses, pauses for enumeration, politeness pauses and pauses of perturbation. The outcome of the preliminary perceptual analysis enabled progress to be made to the objective evaluation using the features of the Speech Analyzer software, namely the measurement of the duration of the pause, and measurement of the fundamental frequency F0 on the syllable preceding the pause while observing these on a phonetic graph. The goal was to provide the subjectively proposed categories of pauses with objective data to prove and highlight their individuality.

For the purposes of future research, the results of the measurements for men and women are presented individually. What is more, it is important to recognize the significance of dedicating a distinct section to silent pauses, as it constitutes a phenomenon that proves challenging to both delineate and scrutinize. Sifianou's perspective provides a clear introduction to the segment: "Pauses are specifically the silences interspersing an ongoing conversation, but silence may carry illocutionary force and have perlocutionary effects in itself" (2011). While the initial aspect of her assertion may not be entirely in line with the thinking behind this research (since pauses encompass more than mere silences in our view), the idea of their potential impact on ongoing speech is entirely plausible. Within this section, attention will be paid to pauses that signify instances of the speaker's non-articulation (Boomer & Dittmann, 1962). An individual section is to be dedicated to the filled pauses.

4. Filled pauses – analysis and overall results

When it comes to filled pauses, Maclay and Osgood (1959) propose that speakers aim to retain conversational control until they reach a point of conclusion. When faced with the potential for losing control through an extended unfilled

pause, during which others might interject, individuals utilize a form of signalling (such as hesitation sounds, repetitions, or prolonged syllables) to communicate their continued control, even while pausing due to uncertainty.

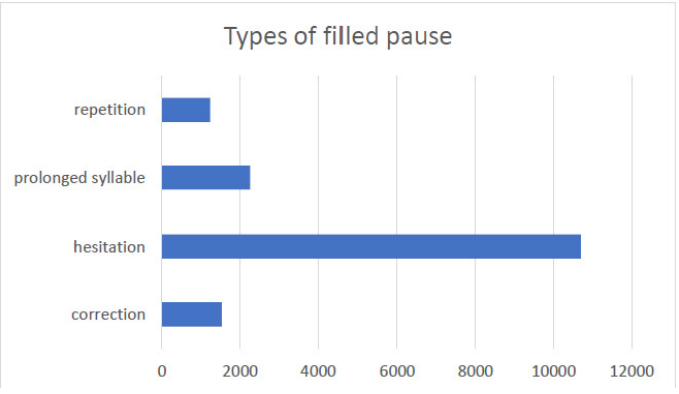

Figure 1. The duration of each observed type filled pause

Among the various types of filled pauses, four forms manifest from a perceptual standpoint: hesitation sounds ("err," "eh," etc.), prolonged syllables, repetition of the preceding word, and self-correction. These interruptions typically stem from the speaker's cognitive state — hesitation while contemplating the next statement or correcting an error in speech. Indeed, Rose (1998) likened these occurrences to hesitation phenomena.

Out of the complete count of pauses (1084), a filled pause surfaced on 33 occasions, spoken by 16 individuals. This scarcity in usage within the dataset arises primarily due to the prepared nature of the speakers' speeches. When Members of the European Parliament (MEPs) employ a filled pause, it is probable that they will incorporate it multiple times throughout their discourse. Illustrated in Figure 1, the graph depicts the duration of each type of filled pause.

Using the Speech Analyzer software, the frequency (in Hz) of each vowel in the syllable preceding a filled pause was quantified. This was done to identify a correlation between the outcomes of quantitative and qualitative assessments. For ease of reference, the collected data is presented in Table 1 to enhance readability of the measured metrics.

An immediate observation is the trend of decreasing fundamental frequency in the final syllable preceding a pause in both female and male speakers. However, the distinction in average fundamental frequency between genders was anticipated due to innate nature of their speech organs. There was also a consistency observed within the shared category of filled pauses instead of evident difference in measurements between the individual types of filled pauses.

	hesitation		correction		repetition		prolonged syllable	
	F	M	F	M	F	M	F	M
No. of occurrences	12	9	3	2	1	1	4	1
decreasing tendency of F0	83 %	100 %	66 %	100 %	100 %	100 %	100 %	100 %
rising tendency of F0	16 %	0 %	33 %	0 %	0 %	0 %	0 %	0 %
min. value of F0 in Hz	163,8	144	199,8	148,7	237	N/A	237	249
max. value of F0 in Hz	341	214	285	185,9	237	N/A	326	249
average value of F0 in Hz	266,3	174,5	251,6	167,3	237	N/A	294,8	249

Table 1. Frequency values of different types of filled pause

5. Silent pauses – analysis and overall results

Upon an initial examination, the acoustic signals from speeches incorporating silent pauses are readily discernible. The abrupt periods of non-articulation not only register audibly with the listener, but are also easily observed in graphs illustrating the speeches. The highlighted part in Figure 2 below showcases the use of silent pause in speech. Figure 2 is accompanied by a transcription of the speech, where the "I" symbolizes a silent pause employed within a sentence and the "O" symbolizes a pause found between sentences.

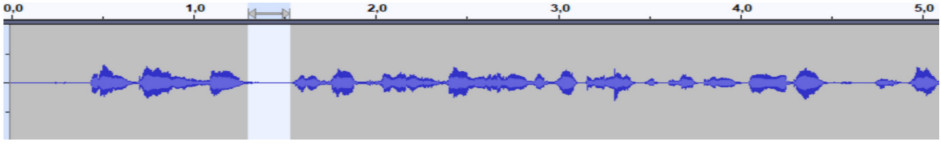

Figure 2. Graph illustrating the use of silent pause

But in doing so I, it is absolutely essential that we commit to taking bolder I and urgent climate action in response I to the deteriorating situation. O

5.1. Segmenting pauses – analysis and overall results

Upon listening to the audio content, we noticed an inclination of the speakers to integrate silent pauses at the junctures of clauses, seemingly aiming to segment semantic units more distinctly and enhance comprehensibility for their audience, hence the name “segmenting pauses”.

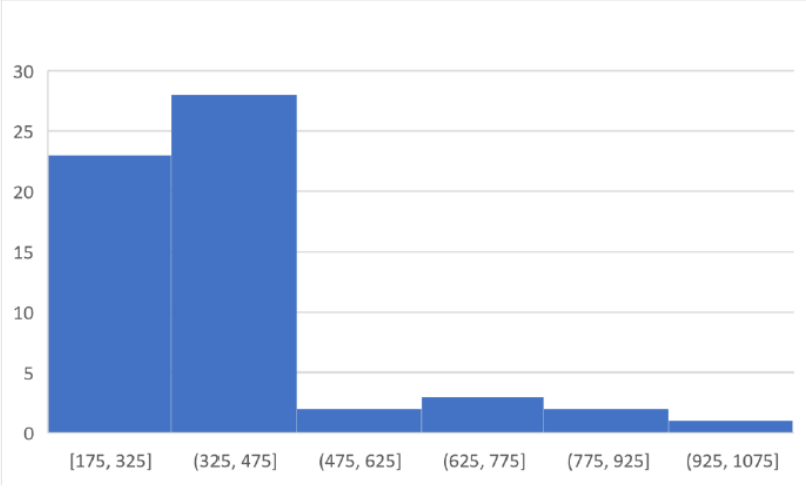

Figure 3. Frequency values relating to duration of segmenting pauses

A pause with the aim to segment utterances was often utilized. Except for pauses occurring between sentences, this segmentation pause was employed on 59 occasions by 24 distinct speakers, with the mean duration of such pauses depicted in Figure 3. On the x-axis, value ranges are organized into intervals, while the y-axis indicates the count of instances. The data on the graph corroborates the observation that the most frequent duration of this pause type typically falls within the range of 175 to 325 ms or 325 to 475 ms.

Considering the syntactic context of the segmentation pause type, the results related to the overall frequency values are presented in Table 2.

It is possible to discern a prevailing trend, by which a decrease in fundamental frequency often precedes the use of a segmenting pause. Instances where the frequency rises include pauses preceding adverbial determiners, those between subjects and verbs, and pauses prior to objects. Among female speakers, the mean fundamental frequency ranges from 159.7 Hz to 273 Hz. In contrast, for male speakers, the interval lies between 127.9 Hz and 227.5 Hz. It must be stressed, however, that the maximal average frequency values for both female and male speakers were influenced by external factors, such as noise from the audience. The rest of the values correspond to the female and male pitch range.

	conjunction		before "to"		adverbial determination		parentheses		between subject and its verb		object		compound sentences	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M
No. of occurrences	2	0	1	0	4	0	12	21	3	8	1	2	3	2
decreasing tendency of F0	100%	N/A	100%	N/A	25 %	N/A	83 %	61,9 %	33 %	88 %	0%	50 %	66%	50%
rising tendency of F0	0%	N/A	0%	N/A	75 %	N/A	16 %	33 %	66 %	12 %	100%	50%	33%	50%
min. value of F0 in Hz	257	N/A	205	N/A	146	N/A	173,6	99,1	251	106,7	159,7	112,9	126,6	219
max. value of F0 in Hz	270	N/A	205	N/A	256	N/A	300	221	284	186,9	159,7	142,9	247	236
average value of F0 in Hz	263,5	N/A	205	N/A	194	N/A	245	160,3	273	155,4	159,7	127,9	199,5	227,5

Table 2. The numerical representation of the use of segmenting pauses, taking into account the syntactic context (F = Female; M = Male)

5.2.Highlighting pauses – analysis and overall results

According to Nordquist (2019), positioning a pause before or after a word can place semantic emphasis and rhetorically distinguish it from the surrounding utterance. Consequently, highlighting pauses can be characterized as interruptions of audible signals utilized by speakers to highlight the significance of specific words within an utterance.

Speakers, particularly politicians, have substantial content to convey. Both the qualitative and quantitative analyses substantiate this assertion. Highlighting pauses emerged on 82 occasions across 32 diverse speakers, irrespective of the language. This outcome shows that each speaker leveraged pauses to emphasize segments of their speech, with a minimum occurrence of two instances. Addressing the duration of these highlighting pauses, Figure 4 provides a summary. The value ranges displayed on the x axis are grouped into intervals, and the y axis represents the number of occurrences of a highlighting pause.

The x-axis exhibits value ranges arranged into intervals, while the y-axis denotes the frequency of highlighting pause occurrences. The graph indicates that the prevalent average duration of this pause variety falls within the range of 110 to 290 ms or between 290 and 470 ms.

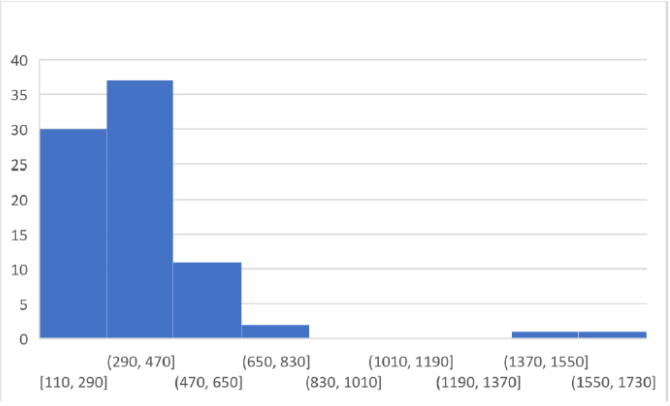

Figure 4. Frequency values relating to duration of highlighting pauses

For an exploration of fundamental frequency values, delving into syntactic context and gender disparities is imperative. In Table 3, frequency value data is provided, categorized according to highlighting pauses and their respective syntactic contexts:

	"to"/"by"/"of"		an adverbial determination		opposition		enumeration		an object		between subject and its verb	
	F	M	F	M	F	M	F	M	F	M	F	M
No. of occurrences	6	3	9	4	3	8	2	3	7	7	13	6
decreasing tendency of F0	83%	100%	66%	75%	100%	37,5%	50%	100%	43%	71%	92%	66%
rising tendency of F0	17%	0%	33%	25%	0%	62,5%	50%	0%	57%	29%	8%	33%
min. value of F0 in Hz	145,3	133,6	136,6	115,7	187	99,4	173,5	127,1	176,8	89,4	169,6	103,3
max. value of F0 in Hz	272	142,3	279	208,4	230	218	217	168,8	321	190	323	216
average value of F0 in Hz	210,9	139	227,6	173,7	202,6	165,4	195,3	141,6	244,5	142,4	272,4	167

Table 3. The numerical representation of the use of highlighting pauses, taking into account the syntactic context (F = Female; M = Male)

A prevalent pattern is the decrease in fundamental frequency (F0) before emphasizing a word subsequent to a pause, observed in the majority of instances.

The reader might observe the average fundamental frequency for female speakers varying between 195.3 Hz and 272.4 Hz, while for male speakers, it spans from 139 Hz to 173.7 Hz, falling in the category of average pitch values for both genders.

5.3. Pauses for further specification – analysis and overall results

Often, political speakers aim for additional specificity or examples while delivering a speech. It was observed that in such situations, when providing details, speakers tend to insert pauses as if to differentiate overarching information from the more intricate details. This additional information typically maintains a connection with the initial segment of a sentence but does not alter its meaning. Unlike a pause serving a purely segmenting function, this pause type can be characterized as a brief interruption of an audible signal employed by speakers before furnishing further information for the initial portion of the utterance. This pause affords the audience time to process the forthcoming information.

Concerning quantitative data, this specific pause category was employed by 32 distinct speakers on 98 occasions. On average, this implies that each speaker utilized this type of pause around three times. The distribution of duration in milliseconds is depicted in Figure 5. The x-axis exhibits value ranges organized into intervals, while the y-axis reflects the frequency of occurrences.

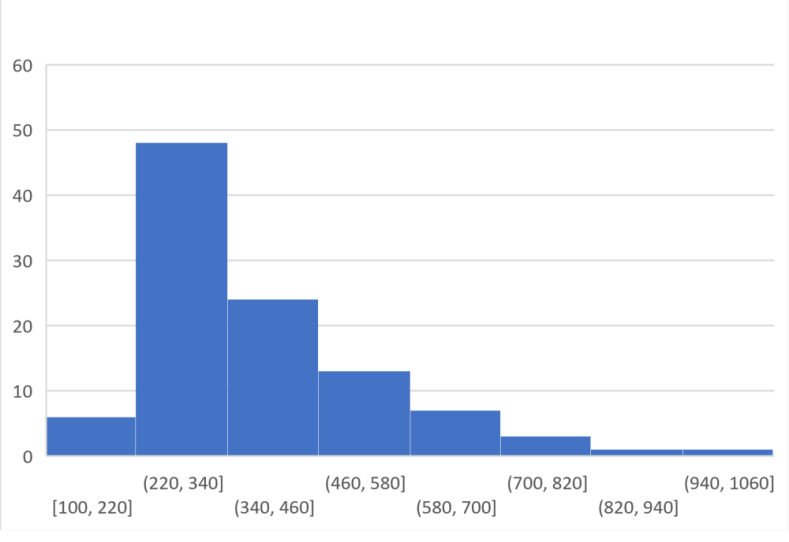

Figure 5. Frequency values relating to duration of pauses for further specification

In forty-eight cases (46 % of all occurrences), the duration ranges between 220 ms and 340 ms. In the second place, with 24 cases (23 % of all occurrences), the

value ranges between 340 ms and 460 ms. Compared to the previous pause types, it may be stated that the average values are slightly shorter.

Considering the frequency, Table 4 displays the differences between male and female speakers with regards to syntactic categories.

The inclination to decrease F0 before introducing a pause remains consistent. The average F0 frequency of female and male speakers in the syllable preceding a pause exhibits certain resemblances. Specifically, the average fundamental frequency for female speakers ranges from 145.4 Hz to 253.6 Hz, while that for male speakers spans between 118.8 Hz and 169.6 Hz.

	and		that/qui		verb		object		for		adverbial determination		colon hyphen		de		"for example", "like"	
	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
No. of occurrences	15	30	16	5	1	2	1	3	1	0	3	3	2	1	6	5	2	1
decreasing tendency of F0	60 %	66 %	43 %	100 %	100 %	50 %	0 %	100 %	100 %	N/A	0 %	66 %	100 %	100 %	66 %	60 %	0%	100%
rising tendency of F0	40 %	20 %	50 %	0 %	0 %	50 %	100 %	0 %	0 %	N/A	100 %	33 %	0 %	0 %	33 %	40 %	100 %	0%
min. value of F0 in Hz	117,3	75,6	117,3	102,3	145,4	143,4	195,3	116,8	207,1	N/A	152,4	103,9	187,9	118,8	214	129,2	191	169,6
max. value of F0 in Hz	275	313	339	177,8	145,4	177,8	195,3	138,8	207,1	N/A	241	204,8	220	118,8	314	190,2	222	169,6
average value of F0 in Hz	205,4	154,1	224,6	140,7	145,4	160,6	195,3	124,4	207,1	N/A	196,7	158,5	203,9	118,8	253,6	160,1	206,5	169,6

Table 4. The numerical representation of the use of pauses for further specification while taking into the account the syntactic context

5.4. Pause of personal stance – analysis and overall results

Frequently, politicians exhibit a tendency to express their personal views on the subject at hand. As a result, content that is undeniably subjective is often encountered. Additionally, politicians often highlight the fact that their forthcoming statements represent their own evaluations of the situation. They can thus be said to employ pauses to distinguish objective information from their subjective interpretation.

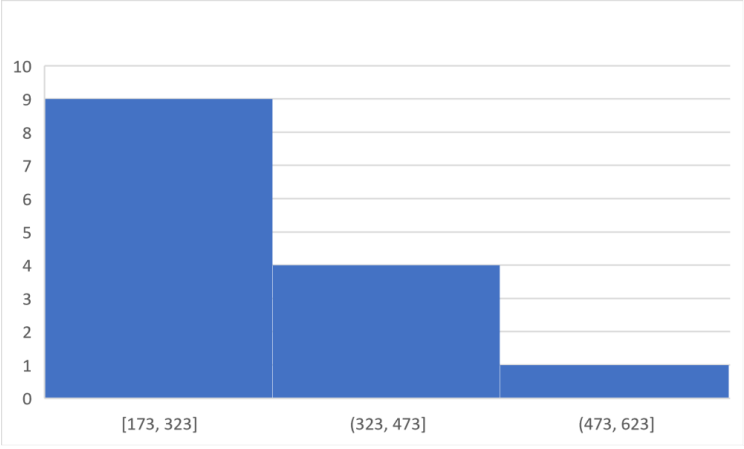

Figure 6. Frequency values related to the duration of a pause employed before personal stance

In the majority of instances, politicians conveyed their personal viewpoints on the subject at hand using adverbs like "supposedly" or "substantially," as well as evaluative expressions. Although employed on a mere 14 occasions by a total of seven distinct speakers, the significance of this pause category should be emphasized. Conveying a personal stance holds a pivotal role within political speeches. The visualization in Figure 6 showcases the distribution of values concerning duration.

In 64% of the cases, the range of such pauses goes from 173 ms to 323 ms. The average duration of a pause in this category is 304 ms. The presented average values are shorter than those measured in the previous pause types.

	F	M
No. of occurrences	8	6
decreasing tendency of F0	88 %	100 %
rising tendency of F0	12 %	0 %
min. value of F0 in Hz	134,4	117,3
max. value of F0 in Hz	287	231
average value of F0 in Hz	199,8	159,1

Table 5. The numerical representation of the use of pauses of personal stance (F=female, M=male)

Taking frequency into consideration, the distinctions between male and female politicians are presented in Table 5, excluding the syntactic context due to the constrained dataset available.

The assertion regarding the inclination of speakers to lower the fundamental frequency in the closing syllable preceding a pause remains accurate. The variance in average F0 values between female and male speakers reflects the typical distinction between female and male vocal tones.

5.5. Pause of opposition – analysis and overall results

A decision was made to distinguish between pauses used to emphasize a specific segment of a sentence, particularly those near contradictory meanings, and pauses used by speakers to indicate their intention to refute a prior statement without emphasizing any particular part of the utterance.

The pause denoting opposition was employed 25 times by 14 distinct speakers. In the context of the overall count of silent pauses within the dataset, it is not possible to assert its prevalence across speeches. Nonetheless, despite this observation, it remains significant. Figure 7 illustrates the distribution of values concerning the duration of this pause type.

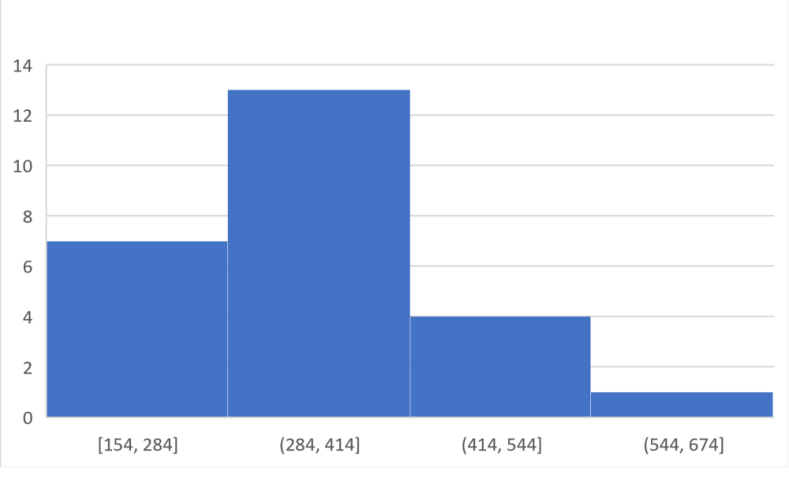

Figure 7. Frequency values related to the duration of pauses employed before a pause of opposition

Among the instances, 52% of the time, the duration resided within the range of 284 ms to 414 ms, contributing to an average duration of 342 ms for this pause category. An additional 28% of the occurrences extended over a lengthier period, spanning from 154 ms to 284 ms.

The analysis of the fundamental frequency measured in the syllable preceding the pause is presented in Table 6.

	F	M
No. of occurrences	11	14
decreasing tendency of F0	85 %	78 %
rising tendency of F0	15 %	22 %
min. value of F0 in Hz	136,4	99,6
max. value of F0 in Hz	285	247
average value of F0 in Hz	223,4	161,2

Table 6. The numerical representation of the use of pauses of opposition (F=female, M=male)

Once more, the prevailing trend of decreasing fundamental frequency can be observed. The average F0 value disparity between female and male speakers corresponds to the typical divergence of F0 between male and female vocal characteristics.

5.6. Hypothetical and conditional pauses – analysis and overall results

Frequently, politicians contemplated the potential consequences of the discussed subject. This contemplation occasionally took the form of hypotheses, while in other instances, they chose to articulate the conditions necessary for a particular outcome. Both the formulation of hypotheses and the enunciation of conditions can be categorized as discussions concerning potential outcomes. In these instances, it was observed that speakers incorporated pauses as if to, in all probability, prompt the listener to envisage one or multiple hypothetical scenarios.

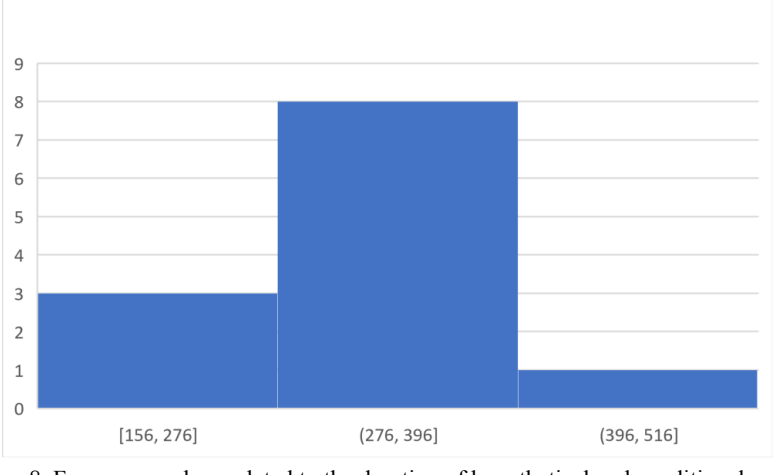

Figure 8. Frequency values related to the duration of hypothetical and conditional pauses

This pause category was utilized infrequently, only 12 times across nine distinct speakers. The current figures underscore that, when integrated into an utterance, speakers typically employed them only once. In terms of their mean duration, speakers dedicated an average of 324 ms to incorporate these pauses before introducing a hypothesis or condition. Figure 8 illustrates the distribution of values related to the duration of these pauses.

A limited frequency of instances has an impact on the graph's reliability. In the majority of cases (66%), speakers utilized a pause lasting from 74 ms to 396 ms. In light of this, the analysis centered on the fundamental frequency is presented in Table 7.

	F	M
No. of occurrences	4	8
decreasing tendency of F0	25%	25%
rising tendency of F0	75%	75%
min. value of F0 in Hz	169,6	144,6
max. value of F0 in Hz	223	223
average value of F0 in Hz	198	176,6

Table 7. The numerical representation of the use of pauses of personal stance (F=female, M=male)

Men utilized this pause at a rate twice as high as women. Equally intriguing is the propensity of both sexes to increase the fundamental frequency (F0) before the pause. The average F0 value for female speakers is greater than that for male speakers.

5.7. Pauses for enumeration – analysis and overall results

"Enumeration serves as a rhetorical technique employed to list intricate details […]. It encompasses a form of amplification or segmentation, wherein a subject is fragmented into constituent components or segments. Authors utilize enumeration to clarify a subject, rendering it more comprehensible for readers."1 This definition fits within the framework of the paper and it is possible to posit that the same principle extends to pauses interspersed between distinct words comprising an enumeration. Speakers utilize this technique to enhance the comprehension of an expression and to signal to listeners that they are about to present multiple elements of the same subject.

[1] Enumeration - examples and definition of enumeration. Literary Devices. (2017, March 18). Retrieved August 6, 2023, from https://literarydevices.net/enumeration/.

Out of a total of 47 instances, just 14 distinct speakers can be identified who utilized an enumeration pause. In other words, when this pause was employed, it was repetitively used to mark the division between each elaboration of the utterance's subject. This aligns with the inherent nature of enumeration – it cannot be employed in one individual instance.

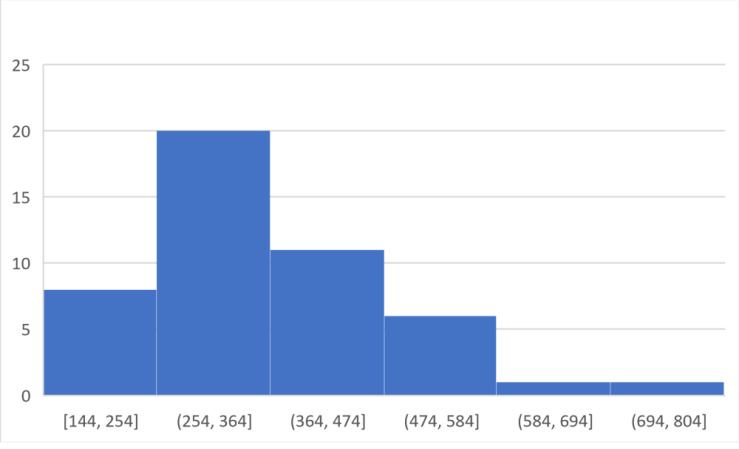

Figure 9. Frequency values related to the duration of an enumeration pause

Out of a cumulative count of 47 instances, 42% of these have durations ranging between 254 ms and 364 ms. Specifically, 23% of them span from 364 ms to 584 ms. The mean duration of this pause type stands at 357 ms, aligning within the prevalent time intervals linked to the duration of an enumeration pause. Table 9 illustrates the outcomes of the frequency assessment, highlighting disparities between female and male speakers.

	F	M
No. of occurrences	36	11
decreasing tendency of F0	91 %	64 %
rising tendency of F0	5 %	36 %
min. value of F0 in Hz	144,5	100,6
max. value of F0 in Hz	331	320
average value of F0 in Hz	262	154,1

Table 9. The numerical representation of the use of pauses of enumeration (F=female, M=male)

As observed in the preceding sections, the inclination to lower the fundamental frequency in the final syllable prior to a pause is reaffirmed. However, it is crucial to

note that instances of an elevated fundamental frequency in the last syllable before a pause were only identified in the ultimate occurrence within an enumeration. Moreover, the frequency values, upon comparing those between females and males, reflect the typical divergence of F0 in average speech for voices of both genders.

5.8. Politeness pauses – analysis and overall results

Usually, one does not immediately consider the use of a pause prompted by the speaker's courtesy towards their audience. Nonetheless, this is the category that attracted initial attention. This inclination could likely be attributed to its near-exclusive employment within the initial moments of a speech. This type of pause can be characterized as one employed as a mark of respect toward the intended recipient of the speech. Through this, the speaker create a distinction between the introductory aspect of the speech and its core content.

Seventeen instances of politeness pauses were utilized by fourteen distinct speakers, implying that nearly all of them (79%) used it in only once. The average duration of these pauses is depicted in Figure 10:

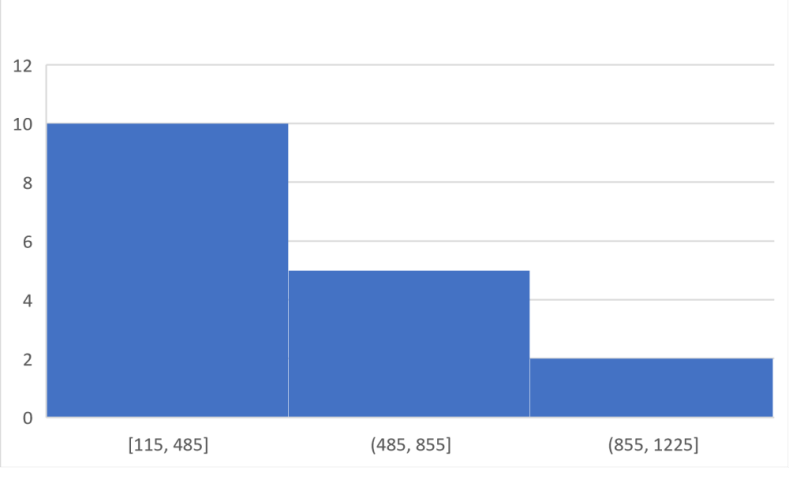

Figure 10. Frequency values related to the duration of politeness pauses

The mean duration of the pause stands at 488 ms, as evidenced within the adjacent initial two columns illustrated on the graph. While the intervals depicted on the graph might appear extensive, they also imply that politeness pauses have a tendency to be of greater length. The frequency values are once more presented in Table 9:

	F	M
No. of occurrences	8	9
decreasing tendency of F0	50 %	33 %
rising tendency of F0	50 %	66 %
min. value of F0 in Hz	159,8	100,9
max. value of F0 in Hz	240	190,4
average value of F0 in Hz	204,1	160,6

Table 9. The numerical representation of the use of politeness pauses (F=female, M=male)

The general inclination of both female and male speakers or politicians is not as conspicuous in this scenario. Among female speakers, 50% of the pauses were preceeded by an ascending trend in the fundamental frequency. On the other hand, male speakers exhibit a more pronounced tendency to elevate the fundamental frequency. The mean fundamental frequency value for female speakers is 204.1 Hz, whereas male speakers attained an average of 160.6 Hz in the preceding syllable.

5.9. Pauses of perturbation – analysis and overall results

Finally, the pauses that speakers do not deliberately introduce but rather utilize due to external factors, such as unforeseen events or their emotional state have been included. These pauses are not intentionally introduced to manipulate or convey underlying meanings within an utterance.

In this instance, it is more suitable to categorize them based on the external event that triggered them:

1. perturbation resulting from the speaker's emotional state,
2. perturbation arising from a disturbance.

Irrespective of their origin, the occurrence of these pauses is deemed to be arbitrary.

Among the complete set of silent pauses examined, there are five instances of a perturbation pause. Despite the limited frequency of occurrences, its significance is relevant.

The average duration of these pauses was 926.5 ms, significantly surpassing the average duration of the preceding categories. The briefest pause spans 246 ms, while the lengthiest endures for 1826 ms. In relation to the fundamental frequency, measurements were feasible in only two occurrences. Despite being classified as silent, these pauses entail external influences, such as applause, which hinder the measurement of the intended values. The trend observed is a reduction in the fundamental frequency.

6. Discussion

In the preceding sections, distinct types of pauses were introduced that were initially identified through perceptual analysis. Specifically, each of these pause types, namely filled pauses encompassing subcategories like hesitation, prolonged syllables, repetition, and correction, along with a dedicated section for silent pauses, were thoroughly examined. The silent pauses were further categorized into segments such as segmenting pauses, highlighting pauses, pauses for elaboration, personal stance pauses, opposition pauses, hypothetical/conditional pauses, enumeration pauses, politeness pauses, and perturbation pauses.

Upon comparing speeches delivered by male and female speakers, as well as analyzing them within distinct syntactic contexts associated with the identified types of silent pauses, no notable differences emerged. This held true for both fundamental frequency and the average duration of the pauses. Although certain subcategories of pauses exhibited a tendency to either lower or raise the fundamental frequency in the syllable just before the pause, the occurrences of such instances were limited, preventing the establishment of consistent patterns. Instead, the aim was to contrast the average values of the ten designated pause types (comprising one filled pause and nine silent pause variants) to either confirm or refute the hypothesis regarding disparities among these mentioned pause types. It was also intended to point out the differences in use of pauses between the two genders.

Looking closer at the results related to the measured duration of pauses, filled pauses, also referred to as hesitation pauses, exhibit greater durations (462.9 ms for female speakers, 496.5 ms for male speakers) than other varieties of silent pauses. Similarly, politeness pauses are characterized by extended durations (555.3 ms for female speakers, 430 ms for male speakers). In contrast, highlighting pauses and pauses reflecting personal stance tend to be among the briefest. It could be contended that speakers employing these two pause types do so to articulate their personal perspectives on the subject matter. Segmenting pauses, pauses used for further specification, opposition pauses, hypothetical/conditional pauses, and pauses for enumeration aid in conveying the speaker's intended point, often complemented by syntactical structure simultaneously. The disparities in results between male and female speakers are minimal.

In her work "On French Prosody" (1974), Vaissière asserts that "a pronounced decline in F0 before a pause signifies the conclusion of a meaningful unit at the sentence's end, while a rise followed by a pause indicates the termination of a meaningful unit in a non-final position within the sentence" (p. 213). She notes that "the position of the meaningful unit (final or non-final position) in a sentence not only dictates the intonation of the unit's final syllable (falling or rising) but also influences the overall F0 pattern for the entire unit" (p. 213). As expounded earlier, the purpose of pauses is to establish grouping or chunking. Most of the pauses examined are positioned at the junctures of these "chunks,"

occurring before sentence continuation. Thus, when these pauses are used at the culmination of a meaningful unit, there is a clear propensity toward a decrease in fundamental frequency. This is observable in filled pauses, segmenting pauses, highlighting pauses, pauses reflecting personal stance, opposition pauses, and enumeration pauses. As an exception, female speakers employing pauses for further specification also show an inclination to elevate the F0, particularly before conjunctions. In instances where the pauses are placed in non-final positions within meaningful units, there exists a general inclination toward an increase in fundamental frequency. This phenomenon encompasses hypothetical/conditional pauses and politeness pauses.

Regarding the mean F0 value for each type of analyzed pause, variations between female and male speakers were anticipated. This divergence ranges from 40.7 Hz to 107.9 Hz. Yet, comparing the average F0 values across distinct pause types to distinctly differentiate between them has proven somewhat intricate. Table 10 condenses the most commonly employed F0 ranges. Consequently, it can be stated with assurance that distinct disparities exist among the defined pause categories.

		most commonly used range of F0	average F0
filled pauses	F	240 - 360	260,4
	M	144 - 196	180,5
segmenting pauses	F	246,6 - 306,6	231,4
	M	141,1 - 183,1	161,2
highlighting pauses	F	192,6 - 248,6	273,8
	M	89,4 - 137,4	166,9
pauses for further specification	F	171,3 - 225,3	218,2
	M	117,6 - 159,6	153,9
pauses of personal stance	F	134,3 - 233,3	199,8
	M	117,3 - 205,3	159,1
pauses of opposition	F	233,4 - 330,4	223,4
	M	99,6 - 163,6	161,2
hypothetical/ conditional pauses	F	N/A	198
	M	N/A	176,6
pauses of enumeration	F	258,5 - 315,5	262
	M	100,6 - 199,6	154,1
politeness pauses	F	159,8 - 271,8	204,1
	M	147,9 - 194,9	160,6

Table 10. The most used ranges of frequency

As indicated, filled pauses can be viewed as a distinctive pause type. Their average frequency is of higher values but the average duration is also notably extended. This can be attributed to the presence of hesitation sounds filling these pauses. While the most frequently utilized F0 ranges may resemble those of filled pauses, the mean F0 value preceding segmenting pauses is lower – 231.4 Hz for females and 161.2 Hz for males, respectively. The duration of these pauses approximates around 400 ms for both genders. This indicates a strategic approach by speakers to distinctly segment one part of their speech from another, which was also apparent in the perceptual analysis.

It was suggested that highlighting pauses would be characterized by higher frequency values. This assumption was partially accurate. Although the average F0 for female speakers is the highest among all identified pause types (273.8 Hz), in the case of male speakers, it ranks second, trailing behind hypothetical/conditional pauses. Additionally, the commonly used F0 range values tend to be lower, akin to other pause types. Notably, instances with lower F0 values are accompanied by longer pauses (for example, 89.4 Hz with a duration of 595 ms), as if to compensate lower values in the other category. On average, these pauses are briefer than segmenting pauses.

Pauses used for further specification are not intended to alter the utterance's meaning; rather, they enhance one part of the utterance by providing supplementary information to the main phrase. This "new information" is introduced, in part, by a low value within the most commonly employed F0 range – ranging between 171.3 Hz and 225.3 Hz for female speakers (averaging 218.2 Hz), and between 117.6 Hz and 159.6 Hz for male speakers (with an average of 153.9 Hz).

Pauses reflecting personal stance share similarities with pauses for further specification. Both provide additional information to the utterance. The distinction between these two types lies in lexical choices. Female speakers exhibit a range between 134.3 Hz and 233.3 Hz (with an average of 199.8 Hz), while male speakers exhibit a range between 117.3 Hz and 205.3 Hz (with an average of 159.1 Hz). Compared to the aforementioned categories, the frequency tends to be lower. The average duration is relatively shorter for both genders. These values should be interpreted as a sign that the speakers do not wish to highlight the following utterance.

A notable difference arises in the comparison of results within the opposition pause category. While utterances by female speakers employing this type are characterized by a higher frequency range – ranging between 233.4 Hz and 330.4 Hz (with an average of 223.4 Hz) – the range employed by male speakers is notably lower, ranging between 99.6 Hz and 163.6 Hz.

Analyzing hypothetical/conditional pauses posed challenges due to limited data, resulting in only average F0 values being discerned. This data is likely influenced by sporadic occurrences of pauses. Alongside the evident choice of lexicon that forms hypothetical/conditional sentences, these pauses tend to be characterized by lower values – 198 Hz for female speakers and 176.6 Hz for male speakers.

Among the most intriguing categories is the enumeration pause category. Results exhibit higher frequencies, a trend potentially influenced by the final portion of the enumeration consistently featuring an elevated F0, possibly serving to emphasize the concluding part and alert the listener. Frequently employed several times within a single sentence, the duration remains consistent within one sentence. The average duration is 372 ms, mirroring the average duration across all pause types.

Politeness pauses are defined by their average frequency values – 204.1 Hz for female speakers and 160.6 Hz for male speakers. However, what sets them apart is their duration. To maintain politeness and address listeners appropriately, speakers opt for longer pauses – averaging 555 ms for female speakers and 430 ms for male speakers.

Although perturbation pauses might conceivably belong to the realm of silent pauses, they can also be characterized by external noises or even complete silence arising from the speaker's emotional state. This complexity prevents the measurement of their F0 values. Considering this definition, their duration, averaging 944 ms, is not unexpected.

In conclusion to this section, one may notice the apparent differentiation between female and male speakers. The reason for this was to remind the readers of the inherent differences between the two genders (in terms of the average pitch values). While the tendency of female speakers to employ pauses for enumeration (36 cases versus 11 employed by males) and filled pauses (20 cases versus 13 employed by males) was observed, other significant differences did not materialise. Given the limited data available, an interpretation of the reasons for the obtained results between the genders will not be attempted.

7. Conclusion

The outcomes obtained from the syntactic analyses (as shown in the tables) of each pause type did not reveal any significant correlations with the results from the quantitative and qualitative analyses. Subcategories within a particular pause type, based on their syntactic contexts, do not exhibit substantial differences within the same category. Nevertheless, they do shed light on where various pause types are likely to be found.

Through both qualitative and quantitative analyses, a lack of substantial differences in pause durations between female and male speakers was demonstrated. Moreover, each defined pause type can be characterized by a distinct average duration value, elucidating its unique features relative to the others. Notably, filled pauses, politeness pauses, and perturbation pauses tend to be the lengthiest.

In both languages, a tendency to decrease the fundamental frequency value before a pause was generally observed. Exceptions to this trend were found in hypothetical/conditional pauses and politeness pauses, where an inclination

towards raising the fundamental frequency was noticeable. This phenomenon might be linked to the non-final position of a pause within a meaningful unit.

Considering the findings, it can be asserted that the pauses delineated through perceptual analyses can be distinctly defined. However, it is crucial to consider all the categories – duration, fundamental frequency, fundamental frequency trend, and syntactic context – to propose a comprehensive and pertinent definition. The proclivity of speakers in both languages to favor specific pause types is also readily discernible.

Taking into account the results, future research may lead to an investigation into the differences in the use of pauses between female and male speakers, between English and French speakers, or even into individual pause types in more detail.

References

Ahrens, B. (2007). Pause (and other prosodic features) in simultaneous interpreting. *Forum*, *5/1*, 1–18.

Boomer, D. & Dittman, A. (1962). Hesitation pauses and juncture pauses in speech. *Language and Speech*, *5*(4), 215–220.

Duez, D. (1999). La fonction symbolique des pauses dans la parole de l'homme politique. *Faits De Langues*, *13*, 91–97.

Duez, D. (1982). La fonction symbolique des pauses dans la parole de l'homme politique. *Language and Speech*, *25*, 11–28.

Literary Devices. Enumeration – examples and definition of enumeration. Retrieved August 6, 2023, from https://literarydevices.net/enumeration/

Esposito, A. (2005). Pausing strategies in children. *Proc. ITRW on Nonlinear Speech Processing (NOLISP 2005)*, 42–48.

Fors, K. L. (2015). Production and perception of pauses in speech. Unpublished Ph.D. Dissertation. University of Gothenburg

Hieke, A., Kowal, S., & O´Connell, D. (1983). The trouble with "articulatory" pauses. *Language and Speech*, *26*(3), 203–214.

Kilic, M. (2013). Pausing preceding and following adverbial clause conjunctions in English: A comparative study of Turkish and native speakers of English. Unpublished Ph.D. Dissertation. Çukurova University.

Maclay, H., & Osgood, C. (1959). Hesitation phenomena in spontaneous English Speech. *WORD*, *15*(1), 19–44.

Nordquist, R. (2020). *Pause (Speech and Writing)*. ThoughtCo. Retrieved August 6, 2023, from https://www.thoughtco.com/pause-speech-and-writing-1691492

Oehmen, R., Kirsner, K., & Fay, N. (2010). Reliability of the manual segmentation of pauses in natural speech. *Advances in Natural Language Processing: 7th International Conference on NLP*, *6233*, 263–268.

Rose, R.L. (1998). The communicative value of filled pauses in spontaneous speech. Unpublished PhD Dissertation. University of Birmingham.

Sifianou, M. (2011). On the concept of face and politeness. In: Bargiela-Chiappini, F., Kádár, D.Z. (Eds.), *Politeness Across Cultures*. (pp. 42-58). Palgrave Macmillan.

Vaissière, J. (1974). On French prosody. *Quarterly Progress Report*, 212–223.