Pausing Preceding and Following *que* in the Production of Native Speakers of French

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Abstract

Pausing strategies in read and spontaneous speech have been of significant interest for researchers since in literature it was observed that read speech and spontaneous speech pausing patterns do display some considerable differences. This, at least, is the case in the English language as it was produced by native speakers. As to what may be the case in French, this study was conducted with a specific focus on the *que* particle. The study reports on the audio recordings produced by native speakers of French (NSF), and aims to identify different silent pausing strategies as they were employed by these speakers. The audio recordings were provided in a twofold procedure: while 17 NSF watched the French version of the animated cartoon, *Scrooge,* and then commented on its various themes, 10 of these participants read a short story, *Les Jumeaux* aloud to a digital audio recorder. Considerable attention was given to pausing preceding (PP) and following (PF) the *que* particle in *que* phrases as well as to the duration of this particle.

Obtained results display significant differences between pausing preceding and following *que* both in spontaneous and read speech. Pausing preceding *que* was observed to be significantly longer than the following position in read speech, in spontaneous speech, however, it was just the opposite.

Résumé

Les stratégies de pause utilisées dans les discours oralisé et spontané intéressent beaucoup les chercheurs dans le domaine de l'acquisition d'une langue étrangère car on a pu observer des différences importantes entre les modes de pause selon les types de discours, lu ou spontané. C'est du moins le cas pour les discours spontanés des anglophones natifs. L'étude présentée dans cet article a pour objectif de voir si c'est aussi le cas pour les francophones natifs, notamment en ce qui concerne la particule *que*. Se basant sur des enregistrements audio produits par des locuteurs natifs du français, cette étude vise à déterminer différentes stratégies de pause silencieuse employées par ces locuteurs. Les enregistrements audio ont été réalisés dans une procédure en deux étapes : tandis que 17 locuteurs natifs du français ont regardé la version française du dessin animé Scrooge (Picsou), puis commenté certaines de ses scènes, 10 d'entre eux ont lu à haute voix sur un dictaphone numérique une nouvelle s'intitulant *Les Jumeaux*. Une attention particulière a été accordée à la pause avant et

après la particule *que* dans des phrases qui en contiennent, ainsi qu'à la durée de cette particule.

Les résultats obtenus montrent des différences significatives à la fois entre les pauses précédant et suivant *que* et entre le discours oralisé et le discours spontané. Alors que l'on observe que la pause avant la particule *que* est plus longue que celle après dans le discours oralisé, c'est le cas contraire dans le discours spontané.

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Introduction

The term *prosody* is such a comprehensive one that it encompasses intonation, rhythm, tempo, loudness, and pauses, because all these aspects of speech interact with syntax, lexical meaning, and segmental phonology. Prosody also provides cohesion and coherence to a text; not only pitch boundaries but also pauses provide information about how lexical conjunctions are used to organize constituents (Wennerstrom, 2001). Prosody may also hint at the speaker's aims and emotional state; for instance, it is through prosody of the speech that we understand whether an utterance is a statement, a question, or a command. An utterance which is grammatically a statement might serve as a question if there is a high-rising pitch boundary at the end (Wennerstrom, 2001).

In line with the arguments of Wennerstrom, regarding the role of pauses in prosody, we believe that not only intrasentential pauses (between clauses, phrases, and even within phrases) but also intersentential pauses carry important functions. They not only reflect the planning of forthcoming verbal output (Kircher, Brammer, Levelt, Bartels, & McGuire, 2004), but also reveal the integrity of chunks within the sentence (Bada, 2006; Bada & Genç, 2008).

Related Research

Researchers studying prosody have investigated both read and spontaneous speech and elaborated on the implication of language teaching. Research on prosody in the speech of native and non-native speakers generally focuses on speakers of English. However, some researchers investigated the speech of speakers of other languages.

Gustafson-Čapková and Megyesi (2005) and Megyesi and Gustafson-Čapková (2005), for example, conducted a study on pauses of speakers of Swedish and found that while silent pauses in professional reading occurred mainly at sentence boundaries (with mean pause duration 271ms), in non-professional reading most of the silent pauses occurred at phrase boundaries (with mean pause duration 561ms). In another study on speakers of Swedish, Hansson (1998) showed that in the oral discourse of Swedish speakers 73% of the pauses in spontaneous speech occur in one of the following three positions: a) between sentences, b) after discourse marker and conjunctions, and c) before accented content words.

Regarding pauses in the speech of native speakers of French, one study is quite interesting in that the speeches of major political figures in France were the subject of the study. Duez (1985) analyzed the political speeches, political interviews, and casual interviews of French politicians Krivine, Le Pen, Mitterrand, Pompidou, Chirac, Rocard, and Marchais for silent pauses. The ten participants in Duez's study were asked to listen to the speeches and then identify silent pauses. The participants identified four pause locations as a) utterance boundary pauses, b) clause boundary pauses, c) constituent (phrase) boundary pauses, and d) within-constituent pauses, of which the last type's predominant role is to indicate hesitation.
Investigating factors playing a role in determining the duration of pauses between utterances or phrases in English, Krivokapic (2007) examined the effects of prosodic

structure and phrase length on pause duration. She argued that while preboundary effects are due either to linguistic structure or to information load, the postboundary effects on pause length were explained by linguistic structure and cognitive factors.

The role and functions of pauses have been mostly studied in the speech of adult speakers. One different perspective, however, was observed in the study conducted by Dankovicova, Pigott, Wells, & Peppe, (2004). Having analysed the speech production of ten eight-year-old children, the researchers found that there was considerable variability among children in their ability to indicate phrase boundaries; and, the differences between the children in their use of boundary features were reflected in the adults' perceptual judgments. Therefore, it seems that pause in speech is a maturational phenomenon. Just as passive constructions are argued to be a maturational phenomena which only start to develop after the age of 5-6 (Guasti, 2002), the use of appropriate pause (i.e., relatively longer pauses between sentences and shorter pauses within sentences) in speech seems not to be fully developed by the age of 8 (Dankovicova et al., 2004). Referring to the rhythmic structure found in the German telephone data Auer, Couper-Kuhlen and Müller (1998) argue that rhythmic structure of German differs from those languages whose phonology is of a type structurally similar to English (e.g., 'stress-timed'). In German, rhythmicity in phone closings seems to be a functional, possibly phonology-independent phenomenon governed by the conversational structure of closings, its function within the larger conversational episode, and its particular demands (Auer, Couper-Kuhlen, & Müller, 1998, p.204). Regarding pauses following and preceding "that" - English equivalent of *que* - Bada (2006) conducted a study with the participation of native English speakers and Turkish speakers of English. Bada's study proves interesting in that English and Turkish differ from each other in terms of both surface and underlying structures. The researcher got the participants to read a text in English. Regarding the pause time preceding and following *that* in that-clauses in read speech he found that while pausing preceding *that* was much longer than in the following position in the production of native speaker group, it was observed to be just the opposite with the Turkish group. Since this is the case in English, we conducted this particular study in order to observe whether such a picture does also exist in French.

Research Questions

In this study, we will seek responses to the following questions:
- Does length of a pause preceding *que* in que-clauses differ from a pause following *que* in the spontaneous speech and readings of native speakers of French?
- Is there any statistically significant discrepancy between the data obtained from the spontaneous speech and the read speech groups regarding pausing preceding (PP) and pause following (PF) *que*?

Data Collection

Participants

In this study, there were two groups of native speakers: spontaneous speech group (SSG) and read speech group (RSG). In SSG, there were 17 native speakers of French, seven males and ten females. Out of the 17 members of SSG, 10 participated in this study as RSG. As for age range in SSG, two were in their twenties, 13 in their thirties,

and two in their late forties; and in RSG, nine were in their thirties and one in her late forties.

Materials

The two materials used in this study are a French version of the animated cartoon, *Scrooge* and a short story *Les Jumeaux*. *Scrooge* is a Disney cartoon film based on Charles Dickens' *A Christmas Carol. Les Jumeaux* is a short story prepared for French language learners and as the title suggests it tells the story of twin siblings. It took each SSG member 3-9 minutes and each RSG member 1-1.5 minutes to complete the tasks assigned. While members of the SSG produced some 11000 words, an average of 650 per each speaker, each RGS member read 261 words of the story, *Les Jumeaux*.

The instrument utilized in the study is *GoldWave Version 4.26*, a comprehensive digital audio editor (see Figure 1). The features of GoldWave can be cited as below:

- Plays, edits, mixes, and analyzes audio
- Applies special effects, such as fade, equalizer, doppler, mechanize, echo, reverse, and more
- Digitally remasters and restores old recordings with noise reduction and pop/click filters
- Records audio from cassettes, records, radio, etc. through computer's line-in
- Makes digital copies of audio CD tracks using the CD audio extraction tool
- Views a variety of real-time graphs and VU meters
- Converts files to/from different formats, such as **wav**, **mp3**, **ogg**, **aiff**, **au**, **vox** and even raw binary data.[*]
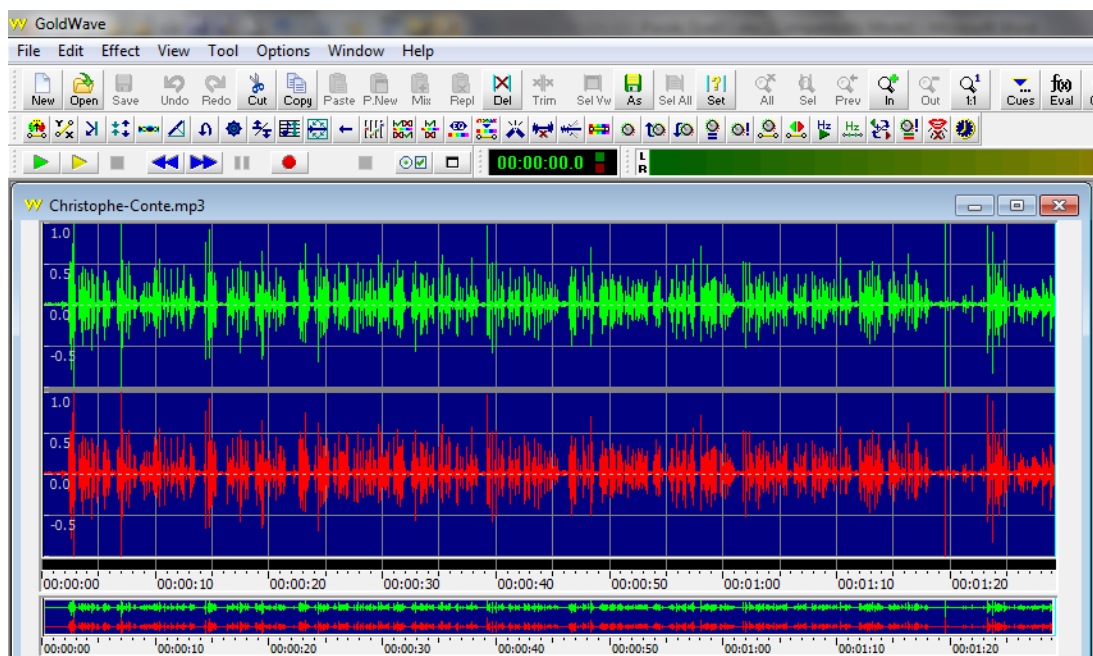

Figure 1: Goldwave sound window

Procedure

The audio recordings were provided in a twofold procedure: while 17 NSF watched the French version of *Scrooge,* and then commented on its various themes, 10 of these participants read the first three paragraphs of *Les Jumeaux* aloud to a digital audio recorder. Prior to the collection of data, participants were instructed that a study on speech dynamics was being carried out in French, and that their consent was sought whether they would be willing to take part in this research. All 17 native French speakers expressed willingness to do so. Upon this, they were told that a French version of the film *Scrooge* was going to be shown to them, and that they were free to comment on any particular point/s of the film after the show, and were asked if they had any reservation about the comments being recorded by one of the researchers. All members indicated that they had no objection to that. Following this process, a week later, 10 of these participants were contacted and were asked if they could further contribute to the study with a text they might be willing to read out loud to an audio recorder. All these participants expressed consent to do so. Thus, narratives from the SSG and the readings of the RSG were both recorded and transcribed into standard orthography for analysis.

In the present study, we used sound spectrograph software to examine the preceding and following pausing times in *que*-clauses in the speech of native speakers of French. In terms of methodology the present study is a mixture of Bada's (2006), and Bada and Genc's (2008) studies: as with Bada's, in this study researchers focused attention on the use of *que*-clauses (which could be accepted as the English equivalent of *that* clauses), and as with Bada and Genc's (2008) study, the data of this study is compriosed of read and spontaneous speech samples of native speakers of French. The Statistical Package for Social Sciences (SPSS 11.5) was utilized in order to observe any discrepancy between pause preceding and pause following the particle *que*. A t-test and an ANOVA were carried out for this purpose.

Results

Referring to the results gathered from the t-test and ANOVA, the researchers could see whether the difference between preceding and following pause times were significant or not.

The Spontaneous Speech Group (SSG)

In the analysis of the data, primarily, we present findings related to SSG. In order to see whether there was a significant difference between the means of pausing times preceding and following *que*; the means of two variables, pausing preceding and following *que*, were compared. The results of this comparison can be observed in Table 1, in which 'N' stands for number of occurrences of *que*-clauses, '$\bar{X}$' for means of preceding and following pausing, 's' for seconds, 'SD' for standard deviation, 'Df' for degree of freedom, 't' for t-test value, and 'p' for probability showing significance.

Table 1
T-test result for pausing times preceding and following *que*-clauses in spontaneous speech

Pausing time	*N*	$\overline{X}$ s	*SD*	*Df*	*t*	*p*
PP	103	0.090	0.263	204	2.095	*0.037
PF	103	0.185	0.374			

As can be observed from Table 1, the mean pausing time preceding *que* was measured to be 0.090s and the following time 0.185s. The t-test result for both measurements, *p=0.037 (ANOVA: *p=0.034), suggests a significant difference which can be interpreted as that, in spontaneous speech, native speakers spend more pausing time following *que* since if they paused after a head of the clause they would have time to prepare new language material to produce for the listener who would surely be expecting upcoming utterances. Mean preceding and following pausing times of spontaneous speech group in Bada and Genc's study (2008) were 0.070s and 0.150s, respectively. Below are a few verbatim examples of noun clauses from the participants' spontaneous speech text, where "…" indicates a short and "……" a long pause.

- *Marley lui prédit … que …… dans la nuit il aura la visite de fantômes.*
- *il découvre … que …… Scratchit vit difficilement mais que ...ben finalement, il est heureux.*
- *Il se rend compte … que …… le... qu'il a un petit enfant qui est malade, ...*
- *Monsieur Scrooge pense … que …… la gentillesse ne sert à rien dans ce monde, ...*
- *il comprend … que …… l'argent c'est pas tout finalement.*
- *il se rend compte … que …… s'il continue sur la même voie, ce qui l'attend c'est le cimetière, la solitude et tout le reste.*

Following the analysis of the speech of SSG, in the second step we investigated the results of the RSG.

The Read Speech Group (RSG)

As can be observed from Table 2, the mean pausing time preceding *que* was measured to be 0.096s and the following time 0.060s. The t-test result for both measurements, **p=0.001 (ANOVA: **p=0.003), again suggesting a significant difference which can be interpreted as that in read speech of native speakers, mostly subconsciously, spend more pausing time preceding *que* for if they paused before the head of the subordinate clause, they would maintain the integrity of the clause of which the *que* complementizer acts as an integral element.

Table 2
T-test result for pausing times preceding and following *que*-clauses in reading

Pausing time	*N*	$\overline{X}$ s	*SD*	*Df*	*t*	*P*
Preceding Pausing	70	0.096	0.782	138	3.370	**0.001
Following Pausing	70	0.060	0.442			

As can be observed from Table 2 there is a great discrepancy between *SD* figure in preceding and following pausing times, which implies that while following pausing times exhibit quite a homogenous pattern, preceding pausing times were rather heterogeneous.

Mean preceding and following pausing times of read speech group in Bada and Genc's study (2008) were 0.061s and 0.027s, respectively. When we have a look at the pausing preceding and following 'that'(English equivalent of que) in that-clauses, we see that the native speakers in Bada's (2006) study paused for 0.242s preceding and for 0.033s following 'that'. Below are presented some of the analyzed sentences from *Les Jumeaux* with pause locations in spontaneous speech.

- *....on ne dirait jamais ……que… ce sont des frères encore moins des jumeaux.*
- *Si je te dis ……que… Thomas est blond, rose et un peu rondouillard, tu comprendras tout seul ……que… Matthieu a sans doute le teint et les cheveux bruns.*
- *Si je te dis ……que… Thomas est gourmand et placide, tu sauras ……que… son frère a peu d'appétit et ……que… c'est un paquet de nerfs.*
- *…. tu peux ajouter sans te tromper ……que… l'autre en raffole.*

Pausing Time: Spontaneous Speech vs. Read Speech

Besides intragroup analysis of PP and PF time in read and spontaneous speech groups, an intergroup analysis of pausing time was also carried out. Table 3 illustrates the pertaining results of PP time in *que*-clauses in both read and spontaneous speech groups. As can be observed from the table, the t-test carried out for this purpose reveals that the difference regarding the means of PP time in reading and speaking is statistically insignificant: p=0.854 (ANOVA: p=0.703).

Table 3
T-test result for PP time in reading and speaking

Pausing time	N	$\overline{X}$ s	SD	Df	t	p
PP reading	70	0.096	0.078	171	0.184	0.854
PP speaking	103	0.090	0.264			

Upon an analysis of the data presented in Table 3, we see that pausing times preceding the complementizer *que* in read and spontaneous speech are almost the same (0.096s in read speech and 0.090 in spontaneous speech). Despite the fact that *SD* reveals that pause times in read speech were more homogenous than they are in spontaneous speech, the t-test analysis did not yield a significant result. That both in reading and speaking the participants spent rather similar pausing time also indicates that the *que* particle in *que*-clauses is treated as head of the clause both in reading and speaking. The fact that no statistically significant difference emerged between PP in read and spontaneous speech may also be interpreted as that the lexical items (*verbes d'opinion*) preceding *que* are more or less clear enough to necessitate the use of this particle both in RS and SS. Thus, the reader/speaker spends the least possible time producing the particle as some kind of component of the following lexical element irrespective of reading or speaking. PF times, however, display great divergence as shown in Table 4.

Table 4
T-test result for PF time in reading and speaking

Pausing time	N	$\overline{X}$ s	SD	Df	t	p
PF reading	70	0.060	0.044	171	2.774	**0.006
PF speaking	103	0.185	0.374			

PP time in reading and speaking did not display a significant difference, the PF time, however, illustrates a rather different picture with a t-test revealing a significant difference: **p=0.006 (ANOVA: **p=0.003). Thus, we argue that native speakers of French do spend more pausing time following *que* since if they paused after a head of a clause they would give clues of upcoming messages. The fact that this significant difference emerged in PF illustrates that in read speech, the reader has a ready text to read from, which shortens the pause time following *que*, whereas in spontaneous speech the speaker has to produce a new utterance which obviously requires a longer pause.

Camdzic and Ackema (2005) argue that although the position of function words in some phrase structures is unclear, such elements may still be regarded, by some, as heads of phrases. Following this development, items like determiners (such as *le*, *la*, *les; the, a*), complementizers (such as *que*, *si*; *that*, *if*, *whether*), auxiliary verbs and modals (such as *être*, *pouvoir*; *to be*, *can*, *will*), and even inflectional affixes for tense and agreement (such as the *−e*, *-es* for first and second person singular pronouns in French and *−s*, *-es*, *-ies* in English) may be regarded as heads of phrases. Thus the tree diagram of *que-clause* could be displayed as in Figure 2:

Figure 2: The tree diagram of a que-clause
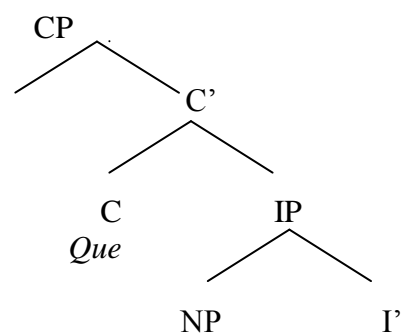
Based on rationalist grounds, Chomsky's theories, and subsequent studies referring to Chomsky, are viable to criticism raised against rationalism in general. For one, on the supremacy of reason and experience in affecting human's cognitive development, Suckiel (1984) reminds us of the drawback of rationalism:

> But now the well-worn Platonic view of man has been undermined by modern science. Biological and psychological findings have made a progressively stronger case for the considerable extent to which human thought and behaviour are governed by non-rational causes. Many have come to accept that desires, hopes, needs, fears, commitments, and the like make their own irreducible contribution to the rich texture of human life, and that the intellectual functions of human beings should not be considered properly pre-dominant under all conditions (p.2)

Hence, while arguing that patterns of pausing preceding and following heads of phrases are to a great extent determined by innate principles and parameters an individual utilizes in acquiring his/her native tongue, we should not ignore the fact that the individual person's desires, hopes, needs, fears, commitments, make their own contribution to a rich texture of human life (Suckiel, 1984).

We, too, believe that although the influence of desires, hopes, needs, fears, commitments, and the like on our intellectual faculties should not be left aside, we should still remember the complex nature of our brains and not forget that even today's advanced technology and medicine are still very far from unfolding the mysteries of the brain.

Considering the findings of this study, it seems reasonable to argue that studies on pausing phenomenon might help to fathom the unfathomable motives in our speech. The findings on pausing phenomena might supply us with information, albeit little, on the process occurring in our brains and thus can have unprecedented implications not only for the field of (applied) linguistics but also for various areas of science such as medicine and psychology.

Limitations

As with almost every study, this study has limitations. For instance, the data in this study was provided by 17 native speakers of French, all of whom served as SSG and ten of whom served as RSG. One drawback we see in this study is the fact that beginning and end points of pausing may not be of exact precision. They are, however, closest approximations. This is due to the fact that the software (Goldwave) utilized produces a sound graph of each reading for each participant, and on the graph, beginning and end of pauses are determined manually by the listener as the sound file is played; and between two points, a measurement is automatically calculated by the software.

Conclusion

The right and left peripheral positions of *que* in que-clauses are marked by different pause times in read and spontaneous speech. As far as pausing is concerned, the dynamics of reading and speech display differences with varying pause times preceding and following certain elements of phrasal and clausal structures.

In Bada and Genc's study (2008) there was some similarity between the means of pauses preceding *to* in read and spontaneous speech groups, this similarity was not found to be statistically significant. In this particular study, however, there was a rather close similarity between means of pauses preceding *que* in read and spontaneous speech, and this was found to be statistically significant.

Unlike the pausing in preceding position in read and spontaneous speech, pausing in following positions revealed a relatively larger gap. That the mean pausing time in following position in spontaneous speech is three times larger than the pausing time in read speech is quite strong evidence in favour of *que* functioning as head of *que-clauses*.

In conclusion, studies on pausing phenomenon, either in read or spontaneous speech, prove to be a touchstone in the debate between empiricist and rationalist

schools of thought. As an extension of rationalism in linguistics, advocates of innateness of language, thanks to advances in syntax and semantics, argue that knowing a language was not merely a matter of associating words with concepts; one of the most crucial parts of language acquisition involves knowledge of how to put words together. In this context, revealing integrity of phrases within a sentence, pausing studies have demonstrated new evidence in favour of the mechanism of innate language acquisition in our brains.

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