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JAUME I**

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**SILENCE IN VIRTUAL MEETINGS:  
THE CASE OF VIRTUAL BUSINESS  
PROFESSIONAL PROJECT**

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LAURA IULIANA TRANDAFIR

NIE: X7197762G

TUTORA: DRA. INMACULADA FORTANET-GÓMEZ

DEPARTAMENTO DE ESTUDIOS INGLESES

UNIVERSITAT JAUME I



## Anexo 1

### Declaración del visto bueno del/ de la tutor/a

D/D<sup>a</sup> Inmaculada Fortanet Gómez Profesora Catedrática del Departamento de Estudios Ingleses de la Universitat Jaume I de Castellón.

#### DECLARA QUE:

El presente Trabajo Final de Máster titulado "SILENCE IN VIRTUAL MEETINGS: THE CASE OF VIRTUAL BUSINESS PROFESSIONAL PROJECT" ha sido realizado por D/D<sup>a</sup> LAURA IULIANA TRANDAFIR con DNI X7197762G, bajo mi tutorización en el Departamento de Estudios Ingleses de la Universitat Jaume I de Castellón, y constituye su Trabajo Final de Máster en el Máster Oficial Universitario *English Language for International Trade*.

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La Tutora

A rectangular box containing a handwritten signature in blue ink. The signature is cursive and appears to read 'Inmaculada Fortanet Gómez'.

Firmado: Inmaculada Fortanet Gómez

## Abstract

The present study provides an overall viewpoint of the symbiotic interrelation that technology and discourse maintain. Due to the development of new communication tools based on Information and Communication Technologies (ICT) researchers are given the opportunity to deal with new academic contexts and genres that pose new challenges for the profession (Ruiz-Madrid & Fortanet-Gómez, 2017). This is the case of Virtual Business Professional Project. The focus of this paper is on the identification of silence during the virtual meetings held by international students in the IBM Connections Platform. Although silence has been studied from multiples approaches, to our knowledge no research has focused on silence in online communication. This investigation emphasizes on the psycholinguistics approach applied by Zuo (2002) and the classification of silence according to Jensen (1973). The analysis is based on the observation of the recordings of virtual meetings held by students at five universities in Spain, the United States of America (Hawaii, California, Utah) and Canada. After conducting a quantitative study on the duration and location of silence in the conversations, our main results seem to indicate that the use of silence in online meetings are related to a number of variables such as context and motivation.

*Keywords: Silence; Psycholinguistic approach; Functions of silence; New technologies; Video conferences;*

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# TABLE OF CONTENTS

1. Introduction .....	1
1.1. Approaches to silence.....	3
1.2. Communicative functions of silence .....	6
1.3. Online communication .....	8
2. Method of research.....	13
2.1. Virtual Business Professional Project .....	13
2.2. Participants.....	16
2.3. Setting and Procedures .....	18
2.4. Instruments.....	22
2.4.1. Virtual Meeting Observation.....	22
2.4.2. Transcription .....	23
3. Results and discussion.....	27
3.1. Quantitative data .....	28
3.1.1. Occurrences per length.....	28
3.1.2. Occurrences per meeting.....	31
3.1.3. Occurrences per group .....	56
3.2. Collocation .....	57
3.2.1. Pauses 1-3 seconds.....	57
3.2.2. Pauses 4-6 seconds.....	62
3.3. Communicative functions .....	68
3.3.1. Linkage function .....	69
3.3.2. Affecting function .....	70
3.3.3. Revelational function .....	71
3.3.4. Judgmental functions.....	73
3.3.5. Activating function.....	74
4. Conclusion.....	76
References.....	79

Figure 1. IBM platform from the perspective of students .....	12
Figure 2. Virtual Business Project overview .....	20
Figure 3. Sample of transcript .....	24
Figure 4. Example of occurrences per length.....	29
Figure 5. Example of transcript in meeting 3 .....	33
Figure 6. Example of transcript in meeting 2 .....	36
Figure 7. Example of transcript in meeting 1 .....	38
Figure 8. Example of transcript in meeting 3 .....	41
Figure 9. Example of transcript in meeting 4 .....	44
Figure 10. Example of transcript in meeting 3 .....	48
Figure 11. Example of multimodality (G2M3) .....	50
Figure 12. Example of transcript in meeting 5 .....	52
Figure 13. Example of transcript in meeting 4 .....	55
Figure 14. General data from 1 to 3 seconds.....	59
Figure 15. Example of collocations group 1 meeting 2 .....	61
Figure 16. General data from 4 to 6 seconds.....	64
Figure 17. Example of transcript Group 2 Meeting 1.....	66
Figure 18. Excerpt from transcript Group 1 Meeting 1.....	69
Figure 19. Multimodal analysis linkage function .....	70
Figure 20. Excerpt from transcript Group 3 Meeting 5.....	71
Figure 21. Multimodal analysis affecting function.....	71
Figure 22. Excerpt of transcript Group 2 Meeting 4 .....	72
Figure 23. Multimodal analysis revelational function.....	72
Figure 24. Excerpt of transcript Group 1 Meeting 2 .....	73
Figure 25. Excerpt of transcript Group 2 Meeting 4 .....	75
Figure 26. Multimodal analysis activating function .....	75
Table 1: Characteristics of the participants.....	18
Table 2. Total number of pauses per meeting in G1.....	32
Table 3. Pauses per minute in G1.....	35
Table 4. Total number of pauses per meeting in G4.....	38
Table 5. Pauses per minute in G4.....	40
Table 6. Total number of pauses per meeting in G2.....	43
Table 7. Pauses per minute in G2.....	46
Table 8. Total number of pauses per meeting in G3.....	51
Table 9. Pauses per minute in G3.....	54
Table 10. Total number of pauses per group .....	57

# 1. Introduction

Silence is a versatile phenomenon which occurs innately in human conversations conveying information valuable in function and meaning. It is important to indicate that the last decade has witnessed a shift in the interest of some linguists in conversational speech, who have demonstrated that, in fact, silence performs communicative functions. This implies that several models and frameworks have been suggested for examining the role of silence in discourse. Unexpectedly, no agreement was found after considering some of the most important seminal works about the classification of silence from a communicative perspective. For instance, researchers have studied silence with respect to its role (Cappella, 1980; McLaughlin & Cody, 1982; Zimmermann & West, 1996) or, its location in a conversation (Richmond, McCroskey & Payne, 1991), or how different emotions influence on its duration (Alam, Riccardi & Chowdhury, 2014). Silence has also been looked into as a non-verbal communication (Bruneau, 2007) and from the perspective of its performances in different cultures or contexts (Richmond et al., 1991). Additionally, silence has been observed as a powerful means to avoid conflicts (Oduro-Frimpong, 2007) and from the psychotherapy perspective (Ladany, Hill, Thomas & O'Brien, 2004; Gale & Sanchez, 2005; Frankel, Levill, Murray, Greenberg & Angus, 2006).

Generally speaking, silence is defined as the absence of speech breaking the flow of a conversation. Its occurrence has the potential to communicate a message, as well as to create human reaction comparable to any other conversational behavior (Jaworski, 1993). Silence in human interaction is used to convey respect, power and avoid conflicts (Saunders, 1985; Tannen, 1990). At the same time, silence provides insight into human behavior, emotion and cognition, among others (Richmond et al., 1991). Both, speech



and silence, are indispensable for human communication, providing clues and completing each other. Nevertheless, unlike research on speech, which offers a great variety of perspectives, the studies on silence are either theoretical or descriptive. Even within the speech research community there are very few studies that have analyzed the functions of silence in a systematic manner. In this way, while speech is interpreted as the main carrier of meaning, silence in human conversation is perceived as a “gap” or as a “pause”, rather than acknowledging its communicative functions. As a consequence of this obvious absence of general agreement, Adam Jaworski (1993), an eminent figure in the field, refuses to celebrate any concluding definition of silence. Regardless of the lack of consensus, the balance is moving towards the multi-determinist theory, in which silence is comprehended by a multiplicity of factors with its own structures, functions and meanings. In other words, since “it only takes one person to produce speech, but it takes the cooperation of all to produce silence” (Jaworski, 1993, p.18), silence is inherently social and communicative. Furthermore, since silence carries meaning, it performs a semantic function, as it shapes sequences of speech, it accomplishes a syntactic function, and as it organizes social interrelations, it conveys a pragmatic function (Kivik, 1998; Zuo, 2002). Thus, for each kind of conversation, there is a kind of silence.

Considering the scarce research on silence in other types of discourse such as spontaneous conversation, and even less on online communication, we present an empirical study about silence in conversation during online meetings emphasizing its relation to the syntactic structures of speech.

The main approaches to silence (Lemak, 2012) that is, the social-psychological perspective, the cross-cultural approach and psycholinguistic approach, are classified in the following section.

## 1.1. Approaches to silence

The social-psychological approach investigates the connection between silence and social-psychological aspects such as: gender, age, personality and societal background (Scollon, 1985; Crown & Feldstein, 1985; Tannen & Saville-Troike, 1985; Kivik, 1998). The second major approach to studying silence comes from a cross-cultural perspective. Within this approach, silence is considered from two points of view: the relativist, and the universalist (Jaworski, 1999). The former states that there are no universals in silence usage cross-culturally, while the latter suggests that, despite the differences, there are still some things we all have in common in our use of silence. And finally, the third approach, the psycholinguistic approach to silence, which I will analyze profoundly in this paper, is supported by the corpus-based *Grammar of Spoken and Written English* by Biber, Johansson, Leech, Conrad and Finegan (2002). It is important to note that the psycholinguistic approach focuses on the distribution of silence in speech sequences. Researchers who adopt this orientation believe that silence in speech conversations reveals information about speakers' lexical decision-making processes and his or her choice of isolated words. Considering this hypothesis, Rochester (1972); Chafe (1985); Zuo (2002) and Nakamura (2004) point out that silence in spontaneous speech tends to precede words of high unpredictability and difficulty. However, compared to simpler speech, syntactically complex speech does not necessarily entail more silence, and hence, does not require any more planning to produce it (Zuo, 2002).

In fact, it appears that silence occurring between syntactic units accomplishes two functions: **marking boundary pauses** and **hesitations**. Hesitations refer to events that are easily observable and they are usually attributable to the speaker having difficulty deciding, not only what to verbalize, but also how to verbalize something (Chafe, 1985). Furthermore, it must be noted that this approach was applied by Zuo (2002) in

spontaneous speech, particularly in studies related to monologues and narration. However, we will apply it to spontaneous speech during online communication. On the other hand, according to Rochester (1972), in order to use the pause as a measure of inactivity between units, it is necessary to distinguish between pauses with different lengths. Hypothetically, brief **pauses** (100msec or less) or  *juncture-pauses*, are intended to aid the listener, “to help put across the structure of a sentence...” (p. 99) and are much harder to observe and record. The longer (to 3 sec) or *hesitation pauses* are supposed to mark the beginning (or end) of speaker units. In addition to this, hesitations often interrupt the flow of speech, while juncture pauses do not. Thus, under “hesitation” we also include the phenomena which classical rhetoric named *aposiopesis* and *anacolouthon*. To quote Bloomfield (1933, p.186):

“In *aposiopesis*, the speaker breaks off or is interrupted: *I thought he [...]*, is *anacolouthon*, *It's high time we [...] oh, well, [...] guess it won't matter*. When speaker hesitates, English and some other languages offer special parenthetical hesitation-forms, as [er] or [hm] in: *Mr. [er] Sniffen or Mr. [...] what you may call him [...] Sniffen or that [...] thingamajiq-transmitter*. This statement defines two of the hesitation types described: False Start and Filled Pause”.

During spontaneous speech humans exchange information beyond the limits of conventionalized arrangements. This process implies that speakers take turns, use overlapping or employ a variety of dysfluent phenomena which slow the conversation flow. On the one hand, Wilson and Wilson (2005) regard turn-taking as a repair in conversation involving exceedingly coordination between speakers. On the other hand, according to Bernstein, Newman, and Strekas, (2009), dysfluent features interrupt the fluency of the conversation and the timing of speech by prolonging the sounds, repeating sounds, words or syntactic patterns or blocking the sounds. Additionally, these

disruptions in the conversation flow may be complemented by the use of silence, as well as by multimodal features, such as body movements or facial expressions (Coleman & Healey, 2011). Dysfluent phenomena consist of: false start, restart, repetition, lengthening and self-correction. For instance, false start is described as speaker's abandon of first attempt at lexicalization, which in some situations is followed by a second attempt to verbalize the same idea (Leech & Svartvik, 1994). Surprisingly, when this process is followed by silence the speaker releases the conversational turn. Restart, on the other hand, involves speaker's intention to articulate few words when, suddenly, returns and repeats the same lexical item. Contrarily to restart, repetition implicates speakers' decision to iterate a word in the middle of the sentence. Usually, just one lexical item is reiterated. Moreover, the most frequent example of lengthening occurs when the ending vowel sound is extended from its usually enunciated duration, as for instance *the* is pronounced as *thee* (ði:). Finally, self-correction is used in order to retract speakers' initial words as a repair. Rose (1998) enhances the importance of filled pauses or hesitations during conversations. The researcher describes them as parts of speech articulated in order to assign time to verbalize the following part of an utterance, usually in the form of an "um" or "uh".

Having all these features into consideration, the aspects of duration and location of silence seem to be crucial when categorizing the functions of silence. In line with Lemak (2012), the issue of duration was one of the several to be encountered by later investigators of pauses who sought to unveil the encoding of units in speech. On the other hand, regarding the location, it is not evident whether pauses function in terms of words, phrases, intonation units, major grammatical constituents in the external or internal construction, or some other aspects of utterances not described by linguistic categories. Consequently, it is not obvious which locations are most relevant to an analysis of pauses,

although, in Zuo's findings (2012), words following a silent pause were less predictable and took significantly longer to replace than words uttered in fluent context.

In addition to the several approaches to silence, there are different perspectives regarding the functions of silence. In the following section we enumerate the differences between the most common perspectives.

## 1.2. Communicative functions of silence

One of the most well-known and admitted functions of silence is “eloquent silence”, that includes the use of silence at religious ceremonies, in the funerals, as a legal privilege or answering to a rhetorical question. Additionally, silence can be employed in several contexts or situations in order to indicate agreement or disagreement, indecision or uncertainty, lack of knowledge or topic avoidance, frustration or anger among others (Ephratt, 2008). It is also possible to use silence as an off-record strategy when it serves as a tool to avoid loss of face (Watts, 1997; Eelen, 2001; Mills, 2003). As a part of politeness theory, this pragmatic interpretation conveys the importance of the hearer's interpretation rather than focusing exclusively on the speaker. On the contrary, the view of linguistic and paralinguistic phenomena as “strategies” produced by the speaker have been contested in recent works on politeness analyzed by Nakane (2006). She states that considering the uncertain essence of silence, it is sometimes complicate to recognize the intentionality of this non-verbal aspect. This researcher identifies intentional and unintentional silence, referring to the former as silence intentionally used as a strategy, while the latter is silence caused unintentionally due to extreme anxiety, embarrassment or panic. Certainly, not all the silences observed in the virtual meetings and discussed in the present study are intentional or strategic. Although this is not the aim of this paper, further research might focus deeply on it. On the other hand, according to Quan (2015)

cultural influences can play a critical role in the functions of silence. This researcher states that silence is similar in several cultures, however, the differences of its cultural outcome could be a handicap in the intercultural communication. Accordingly, the effective intercultural communication involves not only to comprehend information from speech, but also to identify the meaning of silence, because sometimes “silence is more meaningful than speech” (Quan, 2015, p.6). Another important researcher on silence, (Jensen, 1973) claims that due to people’s innate ability to communicate via sound and visual, few people acknowledge that silence can also accomplish several highly important communicative functions. Moreover, there are usually many non-verbal features that complement and aid silence to perform a certain function, such as a clenched fist, a frown, a glare, a nod of the head, a shrug of the shoulders, or a tensed mouth. This multimodal approach of Jensen’s research has made it especially appropriate in the research presented in this study since one of our aims is to focus on multimodal aspects. It is important to note that Jensen (1973) proposed a taxonomy which includes five functions: linkage function, affecting function, revelational function, judgmental function and activating function.

Linkage function: silence can generate connections between people or it can segregate them. That is, this function serves to establish bonds between people because it implies collaboration. For instance, a person might decide to remain silent in order to overthink the answer to a question and therefore, maintain his or her status in a group.

Second, silence fulfills an affecting function. That is, silence has the power to affect people, positively or negatively. For instance, we realize that in some situations people remain silent during an irritating moment in order to maintain the harmony of the relationship.

Third, silence performs a revelational function in communication; that is, it can reveal that someone is hiding something, or it can expose information about people's feelings. When a person in a small group remains silent, he or she might be communicating lack of knowledge or information of the particular subject discussed.

Silence performs not only informational, affective and linkage functions, but also judgmental functions. Silence is employed to express agreement or disagreement with what someone else has said, maintaining the conversation flowing without expressing any disconformity.

Finally, silence performs an activating function in the communicative process. In other words, speakers' pauses marked before choosing certain words may insinuate a reflective mind searching for a specific phrasing.

It must be mentioned that this taxonomy was applied by Phillips (1994) and Jun Liu (2001) within a context of teacher training. However, we will employ it to verify if it could be extrapolated to online communication.

A new contribution of this research is that the psycholinguistic approach and Jensen's taxonomy (1973) are applied to online communication, which is nowadays of crucial importance and is often linked to internationalization and the globalization of the academic field. Thus, in the following section we will try to acknowledge the importance of online communication.

### 1.3. Online communication

We need to consider that the development of new communication tools based on Information and Communication Technologies (ICT), is obliging investigators to succeed in new academic contexts and genres that require new challenges for the profession (Ruiz-Madrid & Fortanet-Gómez, 2017). Furthermore, online communication cannot be

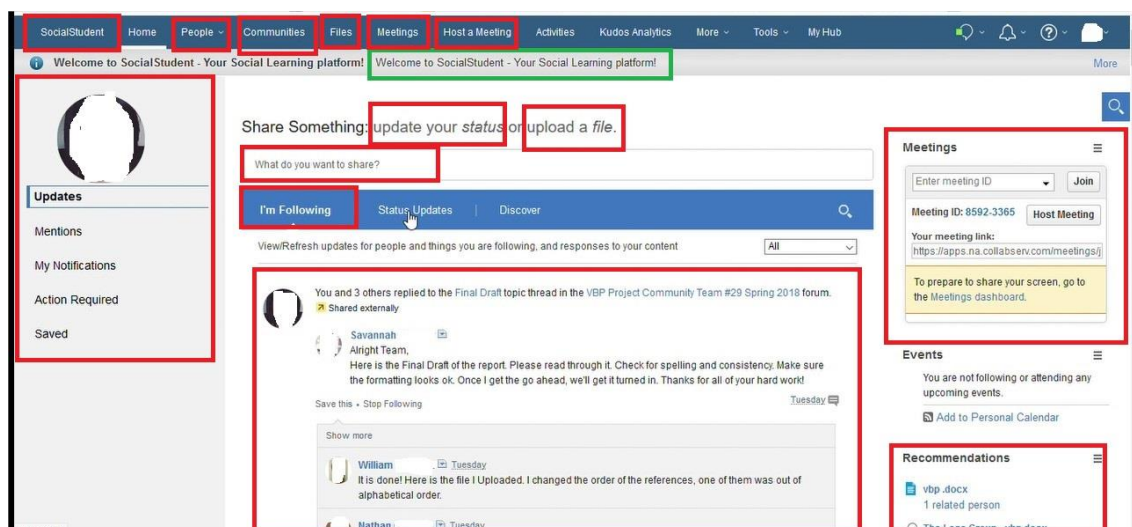
compared either to traditional written text, in terms of the use, for example, the emoticons or the uppercase/lowercase which can be appealed to create meaning (Wang, Zhao, Qiu & Zhu, 2014). For instance, the internationalization and globalization of the business world has led to several variations in the disposition of team work. First, whereas written language is inert, permanent and limited by the properties of space, spoken language is active, transient and limited by the properties of time (Davis, Brewer, & Brewer, 1997). Second, online communication comprises numerous people who develop complex connections related to multiple aims and actions simultaneously (Kerbat-Orecchioni, 2004). Subsequently, due to the predominantly asynchronous nature of online communication, spontaneous speech often occurs chaotically with lengthy gaps intermixed with overlapping topic discussions. Moreover, international companies develop projects spanning a variety of nationalities, involving geographical distance and a range of time zones. Based on Heimer and Vince (1998) virtual teamwork is more complex than working face to face and site-specific cultures and lack of familiarity are reported to be sources of conflicts (Hinds & Bailey, 2003). Interestingly, when it comes to international meetings, participants often meet for any of a wide variety of purposes through computer-mediated environments, rather than face to face (Bainbridge, 2010). The purpose of this shift in the traditional mode of thinking is that online meetings generate greater favorable circumstances for communication by promoting collaborative effective teamwork. Furthermore, it has been suggested that participants who are willing to use online virtual meeting technology are more cooperative, regardless of differences in participant's time zone, native culture, first language and trust (Vakola & Wilson, 2004). In this form, projects based on free/open-source software development (FOSSD) are key examples of online environments where participants collaborate and interact through online devices.



Nevertheless, when it comes to defining video conferencing, we find that there is no specific description. For instance, according to Bates and Bates (2005) the term video conferencing is a confusing one. The reason is that it is not considered a technology in itself, but an interactive two-way communication hosted by several technologies. The term is applied to a wide range of situations, from live video lecturing to large audiences, to a point-to-point, individual-to-individual desktop PC chats. In this sense, it is clear that video conferences include a wide range of multimodal resources, both verbal and non-verbal. It should be noted that multimodal data can be explored from various perspectives (Jewitt, 2004) including for example, systemic-functional multimodal discourse analysis (O'Halloran, 2004) or a multimodal interactional analysis (Norris, 2004). Since communication involves the interplay of various semiotic modes such as spoken language, gestures, facial expression, head movement or gaze, researchers examining face-to-face interaction should go a step further to explore pragmatic competence from a multimodal perspective. Therefore, we can conclude that there are a number of contexts and aims for a video conference. As a consequence, our context of application is online virtual meetings in the IBM Connections platform, related to business world and negotiations between international students. This type of virtual meeting was implemented for the Virtual Business Professional Project (VBP), available at <https://www.marshall.usc.edu/departments/business-communication/vbp-project>. The program consists in gathering students from several courses and different countries in an online community (IBM Connections platform) to complete a designated project. Additionally, in a short interval of six weeks, participants experience real-world using the latest communication technologies operating in nowadays' business world. Students use the IBM platform to communicate via online forums in order to arrange the virtual meetings or revise the documents uploaded. Moreover, they implement Zoom application when

hosting the meeting. It must be noted that Zoom application is employed worldwide in order to attend virtual meetings, webinars or zoom rooms. Additionally, there are many functions that can be executed by students in the IBM platform such as: hosting a meeting, chatting with their group in the forum, following people from the platform, or uploading the documents online. The platform is divided into different submenus and in each submenu there are several folders or groups, as captured in Figure 1. For instance, in the “SocialStudent” section, participants create their own profile where they can describe themselves. Additionally, there is a subsection named “Discover” in the submenu “Home” where students can observe all the activities that the rest of the participants from the whole platform are performing. In “People” students can search for people (either students or teachers) from their own group or from the whole platform to follow or unfollow them, whereas in “Communities” students access their VBP group project. In the submenu “Files” participants upload their documents, revise the files of their group and share the activities and information valuable for the final project. Whereas in “Meetings” and “Host a Meeting” students can arrange the virtual conferences, as well as participate in the meetings or scheduling a different meeting time.

Figure 1. IBM platform from the perspective of students



In the present research we examine online meetings applying the psycholinguistic approach related to syntax and following Chafe (1985); Zuo (2002), Nakamura (2004), and Biber et. al, (2002). In some specific situations, and in order to provide a complete explanation of the communicative situation, apart from the syntactic analysis, we carry on a multimodal analysis. Hence, the purpose of this present study is to identify and analyze silence occurring between speakers in spoken online spontaneous conversations. Firstly, a quantitative study has been conducted in order to verify the hypotheses postulated by researchers on the psycholinguistic approach (Rochester, 1972; Chafe, 1985; Zuo, 2002; Nakamura, 2004). Our interest relies on identifying the duration and location of silence in regard to the syntactic structures of speech. Finally, in accordance with Jensen's taxonomy (1973) we try to identify the communicative functions of silence and verify if they could be extrapolated to online communication.

## 2. Method of research

This research is based on the analysis of the virtual meeting recordings held by students at five universities in Spain, the United States of America (Hawaii, California, Utah) and Canada. Those virtual gatherings included video and audio recorded seminar interaction between students from different backgrounds but similar ages. It is important to consider that no lecturer was present during the sessions, the teams were formed by a maximum of six participants and there was no limitation of time for the virtual meetings. Using the IBM Connections Platform, students planned and held virtual meetings, co-authored and collaboratively revised documents and used project management tools. Having all this into account, it is worth mentioning that the study reported in this paper is part of a larger research project on silence during video conferences, which explores the communicative functions of students' silence as strategies in multicultural university online seminars. Nevertheless, the primary purpose of this present study is to analyze silence from a psycholinguistic point of view based on studies developed by Rochester, (1972); Chafe, (1985); Zuo, (2002) and Nakamura, (2004) and classify it according to Jensen's (1973) communicative functions.

### 2.1. Virtual Business Professional Project

First of all, the Virtual Business Professional Project is a forum which uses IBM's platform to gather students. They accessed the platform using their university credentials and a personal password. It was highly recommended to create a personal profile, where students uploaded a personal photo, displayed their email and their LinkedIn account, described themselves, their hobbies, university, area of specialization and their future expectations. However, since it was not obligatory for the project, some of the participants did not develop their profiles. Additionally, as described previously in Figure 1, the

platform consists of several submenus, where students share their files and useful information regarding the creation of the final project. Considering the time zone factor, each group decided the meeting time for their virtual conferences. Hence, participants accessed the platform from their homes or other specific locations. For instance, based on the analysis of the recordings, 90% of the participants connected from home, and 10% logged in from other locations such as the train station, the airport, football field, university campus, their cars or shopping centers, mainly using their mobile or cellular phones. Moreover, participants were not required to dress adequately for the video conference, and based on the recordings, we can observe people who wear pajamas or casual clothing. Therefore, we can infer that although the topics addressed in the video conferences were academic and business-based, the environment was informal. What is more, according to some of the comments of students during their virtual meetings, generally speaking, there was a sense of disorganization because participants struggled with the usage of the platform. Furthermore, it is important to note that the recordings of the first meetings started similarly in all groups. In some cases, participants opened the meeting before starting to record it, thus, they needed to restart the conversation. In other cases, since students were not familiar with the application, they tried to manage the situation by setting up the configuration of the application (the volume or the webcam). In order to obtain access to the recordings of the VBP Project for this research, a request for permission was needed from the authorities in charge of the project (the USC Marshall Business University), with the authorization of the participants involved in the program. After that, I observed, analyzed and identified silence in eighteen virtual meetings that lasted a total of 434:83 minutes. In addition to this, the object of study was the meetings held by four teams, formed by students from Spain, the USA, Canada, China, Croatia, Israel, India and Hungary. Then, I watched the recordings and I manually transcribed

eighteen virtual meetings. The transcription was produced manually using a free online webpage, available at <https://ezgif.com/video-subtitles> (last accessed 20/08/2018). This tool was employed in order to get the accurate position of the speech sequences (see Figure 2) by stopping and playing the video.

Statistical analytical procedures were performed using Microsoft Excel software. Therefore, data were collected by conducting a quantitative study of all silences from all groups and meetings. I classified silences by lengths (from 1 second to 29 seconds), by meetings (eighteen meetings) and by groups (four groups) and I calculated the percentages (per group, per meeting and per minute), as well as the averages and total occurrences of silence per group and per meeting. In order to attain the aim of this project it was important to reduce the analysis and focus on pauses from 1 to 3 seconds and from 4 to 6 seconds. Consequently, it was necessary to calculate the total number of pauses per group and per meeting and the percentages per minute in that specific range of seconds. Furthermore, in order to obtain accurate averages, it was imperative to distinguish between the groups that performed four meetings and those who completed five meetings.

Additionally, some of the quantitative data collected in this study was related to the syntactic analysis. Silences were classified according to the category of words preceding and following them. The categories of words found were: nouns, pronouns, numerals, negations, articles, verbs, adjectives, adverbs, prepositions, conjunctions, inserts and hesitations. However, we analyzed only the most predominant categories, that is, nouns, pronouns, verbs, adverbs, conjunctions and inserts. Considering the length in seconds, a subsequent division was created in order to differentiate between words that preceded or followed silences from 1 to 3 seconds, and those who preceded or followed silences from

4 to 6 seconds. A quantitative analysis revealed the frequency of the presence of these categories of words before and after short silences in online meetings.

Finally, after identifying the collocations of silence in a sentence, I classified silence according to Jensen's taxonomy (1973), that is, linkage function, affective function, revelational function, judgmental function and activating function. Considering the context and in order to provide a complete explanation of the communicative situation I carried on a multimodal analysis focusing on facial expressions, gaze and head movements.

## 2.2. Participants

The data for this study was collected from students in a graduate-level course requiring high English proficiency from six universities in Spain, the USA (Hawaii, California and Utah) and Canada. In order to preserve the anonymity of the participants and the accurate use of samples in this paper, it was necessary to encode the participants by group and student number. Therefore, **G1** represents "Group 1"; **S1** illustrates "Student 1" and consecutively **G2S2** depicts "Group 2 Student 2" or **G3S4** designates "Group 3 Student 4". In this way, a total of 22 students, 9 men and 13 women of similar ages, were chosen randomly to constitute the final sample of this study. We must note that there is no specific information regarding the high percentage of women attending this course. On the other hand, it is remarkable that all students had a similar age, ranging from 20 to 28 years old, except for one participant who was 47 years. Moreover, participants were students who differed from one another in terms of their nationality, gender and their areas of specialization. Six of the male participants were US citizens (from Utah, Washington, Philippines, Hawaii), two were Chinese (from Canton and Sichuan province) and one was Indian. Whereas, we find a more miscellaneous sample with

women (three US citizens, two Israelis, two Spanish, two Canadians, one Croatian and one Hungarian). According to Ruiz-Madrid and Fortanet-Gómez, (2017) the development of new communication tools based on ICT together with the globalization and the internationalization creates such heterogenous samples, which are beneficial for this theory-testing investigation. Throughout the last half century, the dominance of globalization and internationalization has had an effect on almost every aspect of present-day life, affecting the behavior of people while doing business, travelling or communicating. The fields of technology and education have been similarly influenced by these worldwide tendencies, and this is reflected in the production of the IBM Connections Platform. The purpose of the elaboration of this collaborative platform is that higher education participants accomplish a proficient performance in issues of international environments across cultures and borders. Another effect of globalization and internationalization in education is that students at higher education institutions are required to study outside of their national borders. This is not always possible, but the participation in this kind of projects can contribute to their internationalization at home.

As shown in Table 1, we interpret that sometimes the nationality of the participants is different from the universities they attend. In this way, there is one Israeli woman attending Ryerson University in Toronto, Canada, one Indian man studying at Weber State University, USA, two Chinese males and one Israeli woman attending University of South California, and one Croatian and one Hungarian women registered at Universitat Jaume I, in Spain. Furthermore, there was no specific area of specialization, although participants were mostly related to the Business and Communications world. For instance, we observe people attending mostly Business Management, English language for International Trade, Professional Communications or Accounting, whereas there are two participants who study Science (Clinical Instructor or CI course and Biological



Science). Additionally, all members had prior experience with face-to-face training or with face-to-face teaching, few of them had previous knowledge with video conferencing-tool use, and only one participant had previous experience in the IBM's platform. Table 1 summarizes the characteristics of the population in this study.

Table 1: Characteristics of the participants

CODE	AGE	GENDER	NATIONALITY	UNIVERSITY	AREA OF SPECIALIZATION
G1S1	20	Female	Israeli	Ryerson University	Professional Communication and Music
G1S2	21	Male	Us citizen	University of South California	Communications
G1S3	28	Male	Us citizen	Brigham Young-University	Business Management and Human Resource
G1S4	24	Female	Spanish	Universitat Jaume I	English language for International Trade
G1S5	26	Female	Us citizen	Utah State University	Business Management In Track Field
G2S1	24	Female	Spanish	Universitat Jaume I	English language for International Trade
G2S2	21	Male	Chinese	University of South California	Biological Science
G2S3	25	Female	Us citizen	Ryerson University	Professional Communications
G2S4	20	Female	Us citizen	Brigham Young-University	Business Finance
G2S5	47	Male	Us citizen	Utah State University	Sales and Management
G2S6	26	Male	Indian	Weber State University	No data provided
G3S1	20	Female	Canadian	Ryerson University	Professional Communications
G3S2	20	Female	Israeli	University of South California	Political Economy
G3S3	24	Female	Hungarian	Universitat Jaume I	English language for International Trade
G3S4	23	Female	Us citizen	Utah State University	Maketing
G3S5	21	Male	Us citizen	Brigham Young-University	Business Management
G4S1	22	Male	Chinese	University of South California	Accounting
G4S2	24	Female	Croatian	Universitat Jaume I	English language for International Trade
G4S3	27	Male	Us citizen	Brigham Young-University	Business Operations and Supply Chain
G4S4	23	Female	Canadian	Ryerson University	Professional Communications
G4S5	25	Male	Us citizen	Utah State University	CI course
G4S6	23	Female	Us citizen	Weber State University	Accounting

### 2.3. Setting and Procedures

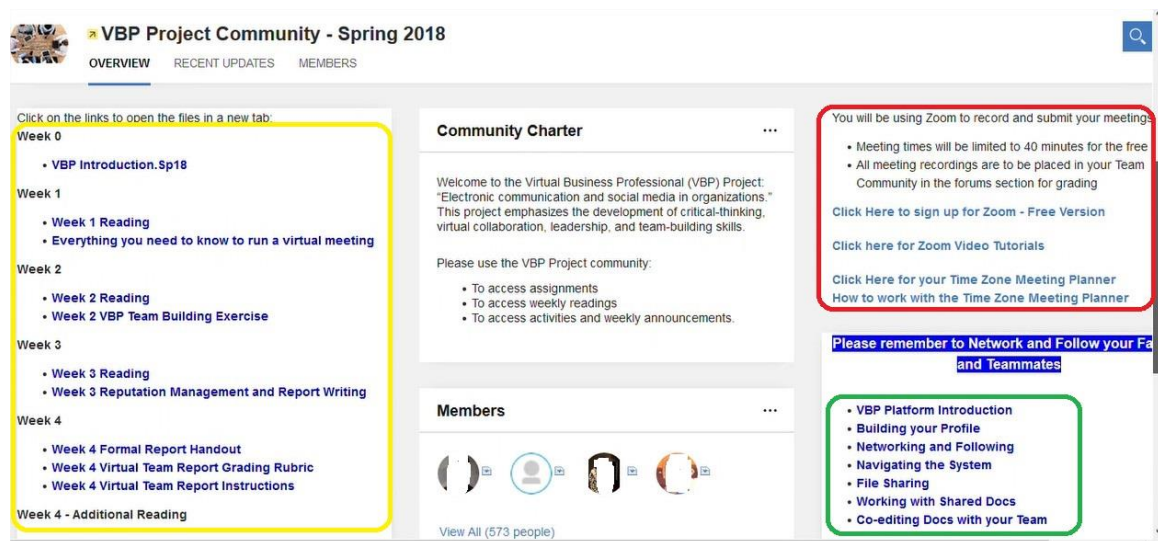
It must be mentioned that the duration of each virtual meeting differs from one another in terms of length and number of participants. Therefore, G1 and G4 held four meetings whereas G2 and G3 held five. Regarding the duration of each meeting, G1 meetings range from 19:03 minutes to 31:19 minutes, G4 meetings range from 11:16 minutes to 38:36 minutes, while G2 meetings range from 18:10 minutes to 38:58 minutes and G3 meetings from 16:33 minutes to 39:05 minutes. Additionally, we observed that there is a frequent pattern in the lengths of the virtual meetings. The introductory and the former meetings lasted less time than those in between.

When it comes to the procedure, the instructors developed previously a set of documents and articles which were posted on the IBM Connections Platform. Additionally, students were introduced to this system in an informative session during their course. The data reflected the organization and the purpose of the project, as well as clues about the participants and the formation of the groups. A general overview of the IBM Connections Platform summarized the advantages of using the platform. For instance, the benefit of using the system freely or allowing students to practice corporate communication protocols. Furthermore, although six sessions were created to finish the final project, each team had the opportunity to conduct the sessions as they preferred, without a limit of time or any previously assigned role. However, students were required to complete weekly tasks in order to accumulate points. Consequently, each session included an individual preparation and a team meeting. In the former, students were supposed to prepare for each meeting and to post an individual preparation meeting summary in the IBM Connections Platform. These tasks valued 5 points. In the latter, participants were required to conduct a weekly team meeting and to post a team meeting summary on the platform. Thus, at the end of each session, one member of the team was in charge of uploading the recording of the meeting and a summary of it in the team folder created in the IBM Connections Platform. Similarly, these activities could score up to 5 points as well.

As mentioned previously, there was a sense of disorganization during the first meetings. Apart from learning how to configurate Zoom application in order to perform the virtual meetings, students needed to become familiar with the IBM platform and understand the purpose of the project. As shown in Figure 2, the section of the documents posted by the instructors are highlighted in yellow color. In this way, for each week document and a further exercise were uploaded, which everyone was recommended to

read and complete. In the upper right corner in Figure 2, marked in red color, we find different links to YouTube related to the usage of Zoom application, as well as links to the Time Zone Meeting Planner. In order to arrange a video conference, students needed to select the best meeting time across time zones. In the website a student added the different locations of the participants in his or her group, as well as the day of the meeting and the website displayed various results with the distribution of the time zones. In Figure 2, some links are emphasized in green color with basic explanations on how to navigate the system, how to co-edit documents or how to share the files.

Figure 2. Virtual Business Project overview



Each meeting involved a different purpose. In the first meeting all the participants were required to familiarize with the members of their team. Thus, they introduced themselves, their studies, personalities, hobbies and further optional information. They listed the names of the team members attending to the meeting and they reported their best meeting times. Therefore, the purpose of the first meeting was to negotiate the meeting time taking into consideration each team member and their locations. Based on the interpretation of the recordings, some of the teams decided to preserve the same day

for further meetings, while others decided to schedule different days depending on the circumstances of the people.

Concerning the second meeting, the participants were required to decide the team roles and rules and complete an exercise. That is, their individual task consisted in establishing some member roles and team rules in order to develop the project. Additionally, they were expected to establish the communication protocols and to identify strategies to work with cultural differences, aiming at being able to navigate cultural and social differences to achieve optimal results. During the virtual meeting, each student shared and justified his or her decision with the purpose of negotiating the best roles and rules for the team. Some important recurrent roles were: meeting coordinator, editor, team coordinator and research coordinator. What is more, some of the teams decided to differentiate between weekly team member roles and the roles for the final project. For instance, the participants responsible for scheduling the meetings and uploading the recordings and the team summary weekly were in charge of editing the final project. In relation to the communication protocols participants decided which was their primary mode of communication (via IBM platform, email, WhatsApp), the frequency of communication (weekly) and the response time (24 hours, 48 hours).

The individual task of the participants in the third meeting was related to searching for information about the weaknesses and strengths of one company and explain them in detail. During the meeting, students summarized the strengths and weaknesses of each company discussed and explained the reason to choose the company. Furthermore, participants provided an action plan with assignments and due dates for each team member and described the goals and the scope for the project. It is interesting to note that, after this meeting, the instructors sent a questionnaire to each member of the team with

the purpose of having feedback about their experience with video conferences and the IBM platform.

In the fourth meeting the participants were expected to summarize the team progress and update the action plan with individual assignments. Besides, they needed to review each other's feedback from the first questionnaire. In other words, participants identified challenges in the team and the project and the benefits of solving conflicts taking into consideration the cross-cultural aspect.

Additionally, some groups needed more than four meetings to reach the goals of the project. In this section we summarize two further meetings: In the penultimate session each member of the team posted a draft in their team folder for the team members to review and make changes. And finally, in the last meeting, which for some teams was the fourth meeting and for others was the fifth meeting, the participants edited the formal report (if necessary) to ensure all recommended categories and the required information were placed in the appropriate section. Next, participants were forwarded a second survey. The purpose of this document was to capture participants' feedback regarding the effects of the online sessions toward their learning.

## 2.4. Instruments

### 2.4.1. Virtual Meeting Observation

In an attempt to study subjective events objectively, a preplanned non-participant (without any involvement) observation method was carried out purposively to answer the research questions and meet the objectives. Furthermore, the amount of time spent on the observation of the recordings lasted two months. During the examination process, extensive notes were taken during and after reviewing the recordings.

#### 2.4.2. Transcription

For a qualitative data analysis, all the virtual meetings were transcribed manually to text format with the aid of a free online webpage available at <https://ezgif.com/video-subtitles> (last accessed 20/08/2018), which is suitable for adding subtitles to videos. The reason to utilize this tool was because it offers reliability for the position of the word sequences. In other words, it permits to stop and play the video file, as many times as needed, in order to write down the sentences. Additionally, to guarantee quality for the transcriptions, only the high-resolution audios of the recordings were taken into consideration. The transcribed text allowed the effective organization of the information needed for this study, as well as, the accurate position of the time in each sentence. Moreover, it is generally known that the meanings of utterances are profoundly shaped by the way in which things are expressed in addition to what is said. However, it must be noted that the emphasis, the speed and the tone of voice were out of the scope of the research presented in this paper. Nevertheless, timing of pauses, as well as other multimodal aspects such as gaze were crucial for interpreting data. The importance of timing lies upon the distribution of silence in the speech sequences, which is the focus of the psycholinguistic perspective. In order to investigate differences related to length of pauses we needed a trustworthy tool that indicates the accurate position of the speech sequences. Figure 3 captures a specific sample of the transcript. Red marks indicate boundary-marking pauses and green marks illustrate hesitations.

Figure 3. Sample of transcript

Tip: pause video to get accurate position.

Start: 00:00:00.0 Use current position Stop: 00:00:19.679 Use current position

We are here [2sec pause] so, now we are recording [3 sec pause] hmmm...so, hi everyone, I'm [redacted] I'm from Utah but I'm attending school in Hawaii and I'm a Business major [1 sec pause], nice to meet you guys [3 sec pause]

Start: 00:00:19.679 Use current position Stop: 00:00:30.273 Use current position

Hi, I'm [redacted] I'm from Spain and I'm studying a Master's Degree in International Trade [3sec pause] and how about you? [3sec pause]

Start: 00:00:30.273 Use current position Stop: 00:00:43.348 Use current position

My name is [redacted] [2sec pause] ahmmm... I'm a Business major in California [4sec pause]

Start: 00:00:43.348 Use current position Stop: 00:00:46.786 Use current position

Great! [2sec pause]

Start: 00:00:46.786 Use current position Stop: 00:01:03.7 Use current position

Hmmm...Hi I'm [redacted], I'm from Canada, I've got a Writer senior at University and I got to study Communications [5sec pause] laughs

Additionally, the aim of this paper is to identify silence during video conferences by analyzing the recordings of the meetings held by four different groups.

In a first analysis I identified all silences (from 1 second to 29 seconds) from all groups by means of the online website. Then, I divided them per meetings and groups in Microsoft Excel files and I calculated the total percentages per minutes, per meeting and per group. Given the high volume of the results, I decided to focus principally on silences from 1 to 3 seconds and from 4 to 6 seconds duration.

On the other hand, we found that G2 and G3 had held five meetings instead of four. To solve this problem, it was imperative to differentiate between G1, G4 and G2 and G3.

Taking into account the above-mentioned circumstances, one of the objectives of this study is to try to identify the frequency in the use of silence in this type of webinar (spontaneous video conference). We also took into consideration the multimodal aspects reflected in the recordings: such as gaze, facial expressions and head movements in order to provide a better interpretation of the functions of silence. After this analysis, we classified silence from a psycholinguistic perspective and related it with the communicative functions proposed in Jensen's taxonomy (1973):

1. linkage function
2. affecting function
3. revelational function
4. judgmental function
5. activating function

As we consider these functions subjective, we assigned them depending on the context and the semantic analysis of the most relevant syntactic structures. It must be noted that only one relevant example of each function was provided. The following research questions guided this study:

(RQ1) What is the frequency in the use of silence in the several meetings and groups?

(RQ2) Is there any difference between the number of silences used in the different groups based on the quantitative data?

(RQ3) Does multimodality help in the identification and consequent classification of the communicative functions of silence?



(RQ4) Can Jensen's functions of silence be applied to online meetings?

### 3. Results and discussion

We will now present and discuss the findings according to the analysis of the recordings from the virtual meetings. The present study provides a quantitative analysis of silence during spontaneous online communication, focusing on its duration and location, as well as its communicative functions. Therefore, the research questions I address in this study are as follows:

(RQ1) What is the frequency in the use of silence in the several meetings and groups?

(RQ2) Is there any difference between the number of silences used in the different groups based on the quantitative data?

(RQ3) Does multimodality help in the identification and consequent classification of the communicative functions of silence?

(RQ4) Can Jensen's functions of silence be applied to online meetings?

To approach these questions, I discovered that a detailed analysis of naturally occurring virtual meeting interaction provided the most appropriate source of data. Consequently, various aspects of the silences employed strategically or involuntarily by the participants of this study have emerged from the observation of the recordings from a multimodal perspective and the resulting syntactic analysis. Findings in this paper are divided into three sections, that is, quantitative data, collocations and communicative functions. In the first section we present several figures and tables related to the duration of silence in the meetings, distinguishing between groups that performed four meetings and groups that completed five meetings. Furthermore, we developed several figures and

tables regarding the location of silence in the speech sequences, which are displayed in the collocation section. And finally, in the last section we present the interpretation of the communicative functions of silence and their multimodal analysis.

### 3.1. Quantitative data

Quantitative data is needed for this research in order to create a more reliable and empirical study as well as to test different theories and hypotheses. In this sense, we wanted to investigate if the psycholinguistic approach reflects the speaker's lexical decision-making by analyzing the distribution of silence in speech sequences. In the following sub-sections, we apply previous investigations to spontaneous online communication. Moreover, as previously mentioned we focus only on pauses from 1 to 3 seconds and from 4 to 6 seconds.

#### 3.1.1. Occurrences per length

We present results for the total duration of the pauses in all meetings and all groups. A total of 4.454 occurrences correspond to pauses ranging from 1 second to 3 seconds. On the other hand, there are 484 occurrences which correspond to pauses ranging from 4 seconds to 6 seconds. These variables can be interpreted in different manners taking into consideration the context of our analysis, that is, the recordings of the virtual meetings. As shown is Figure 4, during large interventions of one speaker in spontaneous speech, there is a tendency to use shorter pauses (from 1 to 3 seconds) and hesitations, while spontaneous dialogue speech tends to be marked by boundary-marking pauses or longer pauses (from 4 seconds). Additionally, pauses marked in bold are related to shorter pauses, while pauses marked in bold italics refer to longer pauses. Blue highlight represents filled pauses, yellow highlight signifies repetitions, grey highlight stands for lengthening and green highlight represents turn taking. It must be noted that in order to

distinguish other actions such as laughs and overlapping, both of them are written in italics and in brackets.

First of all, generally speaking, filled pauses are frequent in spontaneous speech, although this is object of investigation in further larger studies, it is interesting to note that we have found a high frequency of hesitations in virtual meeting communication. In this example, the filled pauses are used in order to assign time to verbalize the next sentence. Regarding the repetition dysfluent feature, as its name suggests, occurs when someone reiterates part of a sentence or a lexical element. The constructions: “I think” and “I don’t know”, are constantly repeated throughout the monologue, which indicates politeness when suggesting or explaining the rules and roles of the members of the team. On the other hand, the repetition of “to have” indicates a strategy in order to obtain time to think the next lexical item. Additionally, the lengthening phenomena appears in this example during the first part of the dialogue while the person speaking was writing at the same time. “On March tenth at” followed by a longer pause (4 seconds) shows that the speaker needed time to coordinate verbalization with the writing process. Another example occurs during S1’s large intervention when the speaker extends the vowel sound as in “then” followed by a 3 second pause and in “on another time” followed by a 2 second pause. This might reflect a necessity of time thinking to utter the next sentence. Finally, the turn taking function following a longer pause (3 to 4 seconds) and a subsequent question indicates that the members of the team were not aware of the final intervention of the person speaking at that time.

*Figure 4. Example of occurrences per length*

<b>G1M1</b>
<b>G1S5 [08: 59 – 09: 00]</b>

So, we meet this time next week

**G1S1 [09: 00 – 09: 08]**

Okay, cool! So [writing] it'll be oon Maarch 10th aat [4sec pause] what time is it here?

[1sec pause]

**G1S4 [09: 09 – 09: 15]**

So, it's the same time, [3sec pause] right?

[.....]

**G1S1 [09:44 - 12:00]**

If we have like an understanding [2sec pause] but [1sec pause] from what I get [1sec pause] hmm... I think that they're going to be roles like in the meetings and then obviously there are going to be roles for the report, so I think that in terms of the meeting, we're going to have to have like an agenda, so [1sec pause] someone's role [2sec pause] like having all the points already at time, set a plan for what we're going to talk about in the meeting [1sec pause] and then [2sec pause] someone who's responsible for recording, other things that we're doing now and other things like taking notes, and then [3sec pause] I think that those are the only roles we need for the meeting. I don't think it won't require anything else, I don't see having other technical problems, hopefully. But for the report hmmm... [2sec pause] which [1sec pause] hmmm... I don't really know how's going to look, because we have to pick a company and anything like that, but [1sec pause] I think we'll have like [2sec pause] we'll split the sections for the report, and we'll have to, I guess [2sec pause] and that's something we have to touch oon anotheer tiime [2sec pause] but I think that we have [1sec pause] someone who's in charge of editing, so whoever who's a very strong writer or someone who's like confident with the editing skills maybe, two people editing that it would be cool. So, this is [laughs] I don't know. But, one to two people who wanna do editing or

[2sec pause] I don't know, referencing. I don't know, one or two people doing that, so we don't have MLA and APA form, and it's all like outsource. And then [2sec pause] I wrote this down somewhere, so hold on [searching] oh yeah, it's in team charter [1sec pause] what am I doing? yeah, so, the editor, the formator, the report coordinator [2sec pause] I think that's really important, so I think that's the contact [1sec pause] to know every week what's the purpose. I think that all we have to do that in the meeting before, so [3sec pause] since we already have the meeting planned for the next week, so [2sec pause] maybe [1sec pause] we decide someone who could do that, like bring it up, and yeah [4sec pause] anyone else? [laughs]

### 3.1.2. Occurrences per meeting

Research on meetings was based on the data provided in the tables below. Results indicate that the frequency of silence during the meetings depend significantly on the circumstances of each meeting. In order to create a more reliable data, we have distinguished between groups that performed four meetings and groups that completed five meetings.

#### 3.1.2.1. Groups with 4 meetings

Groups that performed four meetings are group number 1 and group number 3. The tables and figures below represent important information of each group such as: the range of seconds (1-3 and 4-6), the total duration of each meeting, the percentages per meeting and the total number of occurrences per meeting. In this sense, Table 2 illustrates the percentages based on the total number of pauses in ranges of 1 second to 3 seconds and from 4 seconds to 6 seconds. For instance, during the first meeting that lasted 19:03 minutes, there are 149 pauses ranging from 1 second to 3 seconds. Consequently, 28,61% of the total number of pauses belong to pauses from 1 to 3 seconds. Additionally, we

observe that there are 14 pauses or 5,07% of the total number of pauses, that range from 4 seconds to 6 seconds. As far as the quantitative analysis concerns, the number of silences throughout the meetings in group one is similar to one another, despite the different meeting duration. Nevertheless, an increase is appreciated in the percentage of pauses ranging 1 second to 3 seconds, during meeting four. Taking into account that meeting four represented their final meeting, we understand that this slight increase in short pauses is related to the anxiety of having all the doubts of the project concluded. On the contrary, there is an increment in the percentage of the pauses ranging from 4 seconds to 6 seconds during the third meeting.

Table 2. Total number of pauses per meeting in G1

TOTAL N. PAUSES PER MEETING (G1)				
	MEETING 1	MEETING 2	MEETING 3	MEETING 4
Pauses 1-3 sec	149 (28,61%)	296 (28,88%)	288 (28,95%)	265 (30,35%)
Pauses 4-6 sec	14 (5,07%)	32 (7,92%)	39 (9,74%)	17 (4,84%)
MEETING TIME	19:03	29:40	31:19	26:51

The main reason for this growth is the context of the meeting, which needs to be explained. As it was mentioned previously, each group was offered the opportunity to develop their virtual conferences according to their needs and desires. Hence, in this case, one of the members of the team attended a football match while her group was participating in the virtual meeting. Subsequently, the result of the meeting consisted in long periods of time detecting noises from the outside environment, as well as a great quantity of repetitions. It is important to mention in this case that the situation created some difficulties in the understanding of the members, (In Figure 5, noises and overlapping are highlighted in bold, and the repetitions are represented in yellow color). What is important in this example is that in 02:48 minutes there are ten situations in which noise, as an external factor, is disturbing the continuity of the meeting. Additionally, there are circumstances in which repetition is used in order to reiterate a lexical element as for

instance: “they have”, “they probably” and “like”, and there are other situations in which repetition is employed for context understanding as the tags “right?” and “is that right?”, and the question “Sorry, can you repeat..”.

Figure 5. Example of transcript in meeting 3

**G1M3**

**G1S2 [00:00-00:02]**

Alright, now it's recording [3sec pause]

**G1S1 [00:05-00:05]**

Okay [2sec pause]

[noise]

**G1S1 [00:07-00:58]**

I did Airbnb and I picked it [1sec pause] because [2sec pause] they have a really good Instagram presence they have this hmm [2sec pause] thing that they have on their website called neighborhoods which is like a digital [2sec pause] and I thought that it was really cool [1sec pause] and [2sec pause] [noise] [4sec pause] like [2sec pause] I wanted to pick it for those reasons but also they faced a lot of pressure from the hotel industry [2sec pause] and hmm.. like Municipal city councils because they were accused with like.. I guess probably illegal Airbnb and it's just like they disrupt the hotel industry ...like for obvious things so yeah it's like something to consider

**G1S2 [00:58-00:59]**

Ok, so that would be the weakness, right?

**G1S1 [00:59-01:00]**

Yeah [9 sec pause]

**G1S2[01:09-01:25]**



Ok, so the threats where good Instagram hmmm... neighborhood [noise] [4sec pause]  
a lot of hmmm... [noise] City Council, is that right?

**G1S1[01:25-01:25]**

Yeah [1sec pause]

**G1S2[01:26-01:26]**

Okay [2sec pause]

[overlapping]

**G1S2[01:28-01:40]**

The weakness is the [2sec pause] discrepancy [5sec pause] [noise] do you want to talk  
about Fender also? [2sec pause]

**G1S1 [01:42-02:12]**

Oh yeah I don't really do [noise] Instagram presence [noise] probably more so than  
Facebook cuz [noise] audience I guess they would probably like [2sec pause] a larger  
audience hmmm... [noise] probably only like [2sec pause] people who probably have  
an interest as musicians [2sec pause] we wouldn't probably be interested in [1sec  
pause] it

[overlapping]

**G1S2 [02:12-02:15]**

Would that be strength or weakness? Probably weakness, right?

**G1S1 [02:15-02:17]**

Yeah, I would say [2sec pause] weakness [2sec pause]

**G1S4 [02:19-02:25]**

Sorry, can you repeat the weakness again because I [noise] very well [2sec pause]

**G1S1 [02:27-02:48]**

The weakness in Fender would be that probably [1sec pause] like [2sec pause] it's very weak and like [2sec pause] very external audience would be like [2sec pause] interested in [1sec pause] the [2sec pause] like the company in like it would only reach like [1sec pause] musicians and people interested in music as opposed to [2sec pause] general public, so [2sec pause] that would be I would assume life so that would be

In order to create accurate data for this study, we needed to calculate pauses per minute in each group. Regarding the first group, Table 3 illustrates the total number of pauses per minute ranging from 1 second to 3 seconds and from 4 seconds to 6 seconds. Taking as example the first meeting, results show that there are 7,82 pauses per minute in the range of 1 to 3 seconds, and 0,73 pauses per minute in the range of 4 to 6 minutes. Consequently, these variables were calculated considering data in Table 2. As indicated in Table 2, there are 149 pauses occurring in a range of 1 to 3 seconds. This number of pauses was divided by the total duration of the meeting, that is, 19:03 minutes, and multiplied by 60 seconds (1minute). Accordingly, the formula employed in this example is the following:  $149/19:03*01:00$ .

Table 3. Pauses per minute in G1

	GROUP 1 PAUSES PER MINUTE				
	MEETING 1	MEETING 2	MEETING 3	MEETING 4	TOTAL
Pauses 1-3 sec	7,82	9,98	9,20	9,87	9,34
Pauses 4-6 sec	0,73	1,08	1,25	0,63	0,95
<b>TOTAL</b>	<b>8,56</b>	<b>11,06</b>	<b>10,44</b>	<b>10,50</b>	<b>10,29</b>

As represented in the previous section, we observe that the results throughout the meetings are similar to one another, despite the fact that there is a tendency to increment the number of pauses per minute. Additionally, we perceive that there is a high difference between the number of short pauses (1 to 3 seconds) and longer pauses (4 to 6 seconds).

On the one hand, short pauses occur more frequently during virtual meetings due to the marking of the beginning and ending of speakers' units, while longer pauses usually are attributed to politeness while other members speak or type, time for thinking or internet connection problems among others. As provided in Figure 6, examples of long pauses (4 to 8 seconds) are highlighted in red bold, while examples of shorter pauses (1 to 3) are marked in bold. Although pauses longer than 6 seconds are not object of study in this paper, it is important to note that they occur and that they influence the communication flow in each meeting. In this example, "hmmm...so [4 sec pause] okay, so I guess we'll just fill in the chart", the pause following a hesitator indicates that the student needed more time for thinking. On the contrary, the example of the pause longer than 6 seconds is related to politeness and the patience of the members of the team while one of them was typing a longer answer.

Figure 6. Example of transcript in meeting 2

**G1M2**

**G1S2 [00:00 - 00:04]**

Now it's recording

**G1S1 [00:04 - 00:05]**

Okay

**G1S1 [00:05 - 00:11]**

Hmmm...so **[4 sec pause]** okay, so I guess we'll just fill in the chart

**G1S2 [00:11 - 00:13]**

Yeah

**G1S1 [00:13- 00:21]**

So, okay **[5sec pause]** purpose

**G1S2 [00:21 - 00:27]**

I think that identify as a group [2sec pause] I'm not sure [1sec pause]

**G1S1 [00:28 - 00:54]**

Hmm... I mean like, I guess, the purpose of this project is that we all [2sec pause] are from different backgrounds and places and I guess that the purpose of this assignment is to work together and like combine our strengths and collaborate... hmmm... I don't know [2sec pause] this would be the purpose to write our report [2sec pause] and do the best we can

**G1S2 [00:54 - 01:04]**

[typing] [8sec pause] Alright, and the team goal? [2sec pause]

**G1S1 [01:06 - 01:28]**

Hmmm... work on our collaborative skills [typing] [4sec pause] 'cuz I think that virtual [2sec pause] like [3sec pause] virtual group work is the future of business and communication

Regarding Group 4, which completed four meetings as well, we observe that the total number of pauses is slightly similar from one meeting to another. Data in Table 4 show that, in relation to the following meetings, there is a minor increase in the percentage of silences ranging from 1 to 3 seconds during the second meeting. However, regarding pauses from 4 seconds to 6 seconds, we notice that there is a decrease in regard to the following meetings. These results imply that the conversation during the second meeting flowed naturally and there were few moments of longer silences or uncomfortable situations.

Table 4. Total number of pauses per meeting in G4

TOTAL N. PAUSES PER MEETING (G4)				
	MEETING 1	MEETING 2	MEETING 3	MEETING 4
Pauses 1-3 sec	224 (30,11%)	304 (22,24%)	144 (29,88%)	284 (26,17%)
Pauses 4-6 sec	9 (2,85%)	20 (4,06%)	11 (8,43%)	23 (4,87%)
MEETING TIME	22:15	38:36	11:16	32:29

Figure 7 illustrates the data of the first meeting shown in Table 4. In this situation the members of the team were required to introduce themselves and their hobbies in order to make the first contact. There are twenty-eight moments of short silence (to 3 seconds), marked in red and only one moment of longer pause (5 seconds), highlighted in bold. While the longer pause served for the speaker as a moment of silence in order to check the information from the forum, for the rest of the members of the team implied either respect for their colleague or a passive attitude towards the guidance of the meeting. Nevertheless, the short pauses imply that the conversation streamed easily.

Figure 7. Example of transcript in meeting 1

<b>G4M1</b>
<b>G4S1 00:00- 00:01</b>
So [ <b>2 sec pause</b> ]
<b>G4S2 00:03 - 00:03</b>
Yeah, hey guys
[Laughs]
<b>G4S2 00:11 - 00:13</b>
So, should we introduce ourselves like first?
<b>G4S1 00:13 - 00:14</b>
Ok
<b>G4S2 00:14 - 00:25</b>

Alright, let's go, let's go by the hmm... the draft list [checking] [5sec pause] so, name, hmm... study interests, hobbies and the best meeting times

**G4S3 00:25 - 00:25**

Ok [2 sec pause]

**G4S2 00:27 - 01:20**

Hmmm.. I'm gonna start, ok? yeah [1sec pause] hey guys I'm X but you can call me X [1sec pause] hmm... and I'm a Business and Accounting student in [1sec pause] University of South California [1sec pause] that is based in [1sec pause] Southern California of course, in the US [2sec pause] hmm... so [2sec pause] as I mentioned before [2sec pause] I'm double majoring in Accounting and Business administration and after [2sec pause] this is my last semester actually, with collage [2sec pause] so [1sec pause] after I graduate [3sec pause] I'm gonna I'm gonna join an accounting company with [1sec pause] pwc or advisory and [1sec pause] then I'll see [1sec pause] from there maybe [1sec pause] give it another couple of years [2sec pause] so [1sec pause] my hobbies [1sec pause] hmm... I'm a huge, huge soccer fan, and X I know that you're in Madrid so [2sec pause] I'm like [2sec pause] being following Real Madrid for

[overlapping]

**G4S3 01:20 -01:22**

I'm from Croatia you know

**G4S2 01:22 - 01:27**

Ok [1sec pause] but you're in Madrid you have [2sec pause] you know [1sec pause] you have all the soccer environment [1sec pause] right?

**G4S3 01:29 - 01:29**

Yeah

**G4S2 01:29 - 01:31**

That's all I want I know Real Madrid for [2sec pause]16 years yeah

Considering the results presented in Table 5, when calculating the number of pauses per minute, we found that the four meetings are similar, except the third meeting which presents an increment of short pauses per minute (from 1 second to 3 seconds). Respectively, pauses from 4 seconds to 6 seconds exhibit an increase during the fourth meeting. These results were calculated taking into consideration data in Table 4. Consequently, pauses per minute ranging from 1 second to 3 seconds were calculated by dividing the total number of occurrences by the duration of the meeting and multiplied by 60 seconds (1 minute). On the other hand, pauses per minute ranging from 4 to 6 seconds were calculated by dividing the total number of occurrences by the duration of the meeting and multiplied by 60 seconds (1 minute). To provide an example, the formula to calculate pauses per minute ranging from 1 to 3 seconds, in the third meeting, is the following:  $144/11:16*01:00$ .

Table 5. Pauses per minute in G4

	GROUP 4 PAUSES PER MINUTE				
	MEETING 1	MEETING 2	MEETING 3	MEETING 4	TOTAL
Pauses 1-3 sec	10,07	7,88	12,78	8,74	9,14
Pauses 4-6 sec	0,40	0,52	0,98	0,71	0,60
<b>TOTAL</b>	<b>10,47</b>	<b>8,39</b>	<b>13,76</b>	<b>9,45</b>	<b>9,74</b>

Data illustrates that there is an increase in pauses per minute during the third meeting in regard to other meetings. Figure 8 is an example of the transcript during the third virtual meeting, which highlights the use of longer silences (in this case from 4 to 8 seconds) functioning as boundary-marking pauses. As a matter of fact, context is important in order to understand the uses of longer pauses in this meeting. From the very beginning S1 (student 1) took the lead while the rest of the members of the team remained

in the background. Therefore, shorter pauses (1 to 2 seconds) are employed in yes/no answers, while longer pauses and hesitators (hmmm) are used for longer answers, which implied the active participation of the rest of the members of the team. To exemplify this properly, at the end of the transcript highlighted in purple, S1 uses a hesitator followed by the repetition of “what else, what else” and a question that involved a longer answer. The hesitator followed by the repetition could indicate impatience or an attempt to change the topic. Additionally, considering that no answer was provided afterwards, S1 formulated a question which implied a yes/no confirmation by the rest of the members of the team.

Figure 8. Example of transcript in meeting 3

<b>G4M3</b>
<b>G4S2 [04:02 - 04:03]</b>
Is part of the Amazon too? [ <b>1sec pause</b> ]
<b>G4S3 [04:04 - 04:05]</b>
Yeah it's part of the Amazon
<b>G4S2 [04:05 - 04:07]</b>
Oh okay [ <b>1sec pause</b> ]
<b>G4S1 [04: 08 – 04:12]</b>
But we have to treat them as a different company cuz I think they have a totally different approach right now [ <b>5sec pause</b> ]
<b>G4S2 [04: 17- 04: 17]</b>
Okay [ <b>4sec pause</b> ]
<b>G4S1 [04: 21 - 04: 22]</b>
There's going to be Amazon, so [ <b>8 sec pause</b> ]



**G4S2 [04: 30 - 04: 30]**

I think Amazon [8 sec pause]

**G4S1 [04: 38 - 04: 41]**

Okay, I'm happy with it, so is going to be Amazon, then? [1sec pause]

**G4S3 [04: 42 - 04:42]**

Yeah [2sec pause]

**G4S1 [04: 44 - 04: 46]**

Okay, hmm... what else, what else do you have to do in this meeting? [4sec pause]

**G4S2 [04: 50 - 04: 50]**

Hmmm [4sec pause]

**G4S1 [05:00 - 05:03]**

Can anyone make sure we don't leave anything?

#### 3.1.2.2. *Groups with 5 meetings*

In the following section groups that performed five meetings are analyzed and described. First of all, we decided to distinguish between groups that performed four meetings and groups that completed five meetings in order to provide more accurate data. The former groups needed two meetings in between to set and complete the project, while the latter groups employed three meetings in between to set, plan and complete the task.

Based on the information provided in Table 6, in terms of time duration of the meetings, the first and the last meetings concluded before thirty minutes, while the remaining three meetings in between lasted more than half an hour. Nevertheless, the percentages of the total number of pauses in each meeting are to a certain extent similar, with the exception of the third and fourth meetings, which present an increase. On the one hand, the third meeting displays a high increment in the total number of pauses ranging

from 4 to 6 seconds. In other words, 9,97% of the total of pauses during the third meeting are pauses from 4 seconds to 6 seconds. With respect to other meetings, the fourth meeting shows a rise in the total number of pauses ranging from 1 to 3 seconds, as well as of pauses from 4 to 6 seconds. A possible interpretation of these results is that participants during the third and the fourth meetings, apart from communicating orally, they used the time of the meeting to collaborate in the process of writing the planning for the final project. Therefore, the interventions lack the flow of the rest of the meetings.

Table 6. Total number of pauses per meeting in G2

TOTAL N. PAUSES PER MEETING (G2)					
	MEETING 1	MEETING 2	MEETING 3	MEETING 4	MEETING 5
Pauses 1-3 sec	109 (18,81%)	231 (20,52%)	290 (24,12%)	330 (30,56%)	266 (29,64%)
Pauses 4-6 sec	4 (1,65%)	12 (2,45%)	46 (9,97%)	40 (9,21%)	11 (3,61%)
MEETING TIME	18:10	33:57	38:58	35:07	25:52

The example of the transcript in the fourth meeting in Figure 9 illustrates the high percentage of pauses ranging 1 to 3 seconds. Short pauses are highlighted in red, while longer pauses (in this case up to 6 seconds) are marked in green color. As in other situations the employment of short pauses indicates that the conversation flowed properly, and the speakers had facility to speak fluently. What is more, the example shows that the turn takings or the transition between speakers streamed efficiently due to the short pauses. For instance, the first question of the transcript highlighted in yellow: “How about you guys?” received the answer 1 second later: “I have about 2 weeks left”. The reiteration of the question “How about you? [1sec pause] How about you guys?” indicates the hearers the interest of the speaker to initiate a small talk. The addition of the noun followed by a short pause indicated other speakers the releasing of the conversational turn.

On the other hand, the first employment of longer pause, marked in purple color in the example, occurred due to a series of interruptions which led to overlapping and confusion. On the contrary, the second incidence of 6 seconds pause, marked in blue color in the example, appeared as a result of a moment of reflection followed by the welcoming of another member of the team. This long pause implies changing the topic.

Figure 9. Example of transcript in meeting 4

**G2M4**

**G2S2 02:18 - 02:21**

How about you? [1 sec pause] How about you guys? [1sec pause]

**G2S1 02:22 - 02:23**

I have about 2 weeks left

**G2S2 02:23 - 02:27**

[interruption] I just thought [1sec pause] oh [2sec pause] 2 weeks, nice [1sec pause]

**G2S1 02:28 - 02:31**

[interruption] are you gonna

**G2S3 02:31 -02:32**

Two to four weeks [6sec pause]

**G2S2 02:38 - 02:40**

Sorry X, I'm talking over you, go ahead

**G2S3 02:40 - 02:45**

Oh [2sec pause] I mean, are you guys having a semester or quarter system? [3sec pause]

**G2S1 02:48 - 02:50**

Hmm.. I'm on semester

**G2S2 02:50- 02:50**

Semester for me

**G2S3 02:50 - 02:50**

Oh semester [6sec pause]

**G2S2 02:56 - 02:58**

Hi [1sec pause] X [1sec pause]

**G2S4 02:59 - 02:59**

Hi! [3sec pause]

**G2S2 03:02 - 03:06**

Yeah, we have about 3 weeks till the finals, so [unintelligible -noise]

**G2S1 03:13 - 03:35**

Hmm... in my program we don't really have a lot of [1sec pause] a final exam [2sec pause] because it's communications [1sec pause] so, right now this is sort of my exam time because I'm putting together so many projects with other people and creating contents, so it's been just like [2sec pause] super crazy for me [1sec pause] but once, once classes are done I'm kinda just like [2sec pause] done [2sec pause]

**G2S2 03:37 - 03:38**

That's good

**G2S1 03:38 - 03:41**

Yeah, I do have, have one final exam, so

**G2S2 03:41 - 03:43**

Ok [1sec pause] nice

**G2S1 03:44 - 03:53**

You know [2sec pause] I think that X maybe is having troubles finding the link, but [1sec pause] I just wanna go over what I think we need to [2sec pause] get through today [1sec pause] I just made a little list

Table 7 shows the pauses per minute in group number 2. There is a distinction between pauses ranging 1 second to 3 seconds and pauses from 4 seconds to 6 seconds. Data indicates a constant increase in the number of pauses per minute ranging 1 to 3 seconds whose culminating point occurs during the fifth meeting. On the other side, the number of pauses per minute from 4 seconds to 6 seconds shows an increment during the first meetings, reaching the highest point during the third meeting and decreasing in the following meetings. The information in this table is based on Table 6, thus the results were calculated taking into account the number of pauses (from 1 to 3 seconds and from 4 to 6 seconds) divided by the duration of the meeting and multiplied by one minute. For instance, regarding meeting number 3 which displays the highest number of pauses per minute in the range of 4 to 6 seconds, the formula used was the following:  $46/38:58*01:00$ .

The information in Table 7 correlates with the percentages illustrated in Table 6, thus the interpretation of the results is similar. It seems that regarding the high increment in the employment of short pauses (1-3sec) during the fifth meeting, the recurrent small talks shape the flow of the conversation. However, when it comes to the third meeting, the increment of longer pauses (4-6sec) suggest lower active participation in the conversation.

Table 7. Pauses per minute in G2

	GROUP 2 PAUSES PER MINUTE					
	MEETING 1	MEETING 2	MEETING 3	Meeting 4	MEETING 5	TOTAL
Pauses 1-3 sec	6,00	6,80	7,44	9,40	10,28	8,06
Pauses 4-6 sec	0,22	0,35	1,18	1,14	0,43	0,74
<b>TOTAL</b>	6,22	7,16	8,62	10,54	10,71	8,81

In order to exemplify the results from the data provided we selected an excerpt of the transcript during the third meeting. In Figure 10 short pauses (in this case from 1 to 2 seconds) are highlighted in green, while long pauses (from 4 to 11 seconds) are marked in red color. First, considering short pauses, the interpretation is similar to the one given for previous examples, that is, they generally occur during speaker's longer interventions and they serve as boundary-marking pauses in the transition of the turn taking. Since the pauses are short, it suggests that the conversation flows effortlessly and that the members of the group participate actively in the conversation in that moment. Nevertheless, we can observe an increase in the number of longer silences during this meeting. Although it is not object of study in this paper, in this extract we notice a long pause of 11 seconds, highlighted in purple, which marks the moment of transition from small talk to the subject of the meeting. Additionally, the previous six second pause is related to additional information on the small talk (in this case, weather), which in this situation does not provide any valuable information. We notice that after changing the topic to focus on the subject matter of the meeting, the pauses in the turn takings are larger, which indicate that the participants needed time to familiarize with the new topic. One exception to this explanation is the false start highlighted in green in the text: "how their reputation is set, so [4sec pause] I'm [1sec pause] yeah mine definitely [1sec pause] mine wasn't a good choice". Surprisingly, in this context S2 marks a long pause before acknowledging a defeat. Moreover, the reiteration of the possessive pronoun "mine" and the utilization of the adverb "definitely" suggest that the election that S2 previously prepared affects his attitude. This is corroborated when S2 adds: "mine wasn't a good choice". We believe that in addition to this explanation, a multimodal analysis is needed in order to illustrate the gaze before verbalizing "mine wasn't a good choice". Figure 11 captures the moment in which S2 marked the 4 seconds pause. We observe that the gaze is directed to the left

and down, which suggests self-talk, the head is slightly bended and although the mouth is open, the corners of the mouth are slightly angled downwards, which evokes a sad face. These observations provide evidence that S2 was affected by his previous decision and thus, he marked a long pause before verbalizing it.

Figure 10. Example of transcript in meeting 3

**G2M3**

**G2S2 01:46 - 01:47**

Yes, I certainly am

[Laughs]

**G2S1 01:50 - 01:56**

It's a grey windy year, wow [2sec pause] the wind just cuts through your bones and [1sec pause] oh my gosh

**G2S3 01:56 - 01:56**

That's crazy [2sec pause]

**G2S1 01:58 - 02:01**

It cuts your face when you go outside

**G2S2 02:01 - 02:04**

The nice thing is that it's really, really cold, so it's not gonna snow

**G2S1 02:04 - 02:06**

Yeah

**G2S2 02:06 - 02:10**

When it's -10 it might still snow, but, but -20 [2sec pause] we're pretty good [6sec pause]

**G2S1 02:16 - 02:18**

But today it's like +40 degrees, so yeah it's pretty nice [1sec pause]

**G2S3 02:19 - 02:19**

Yeah, very nice [11sec pause]

**G2S2 02:30 - 02:38**

So, ladies let's speak about the companies. The company that I chose I'm gonna go right through it right away, just learn more about what we're looking for [4sec pause]

**G2S1 02:42 - 02:42**

Okay, no worries [4sec pause]

**G2S2 02:46 - 02:49**

I don't think, I don't think any of us is gonna be in favor, now that I learnt more about what we're gonna do, so

**G2S1 02:49 - 02:52**

Is it that cupcake shop you were talking about [2sec pause] the other day?

**G2S2 02:52 - 02:57**

Oh [2sec pause] that's a good one too, but no, not that one

**G2S1 02:57 - 03:00**

Oh [laughs] [2sec pause]

**G2S2 03:02 - 03:31**

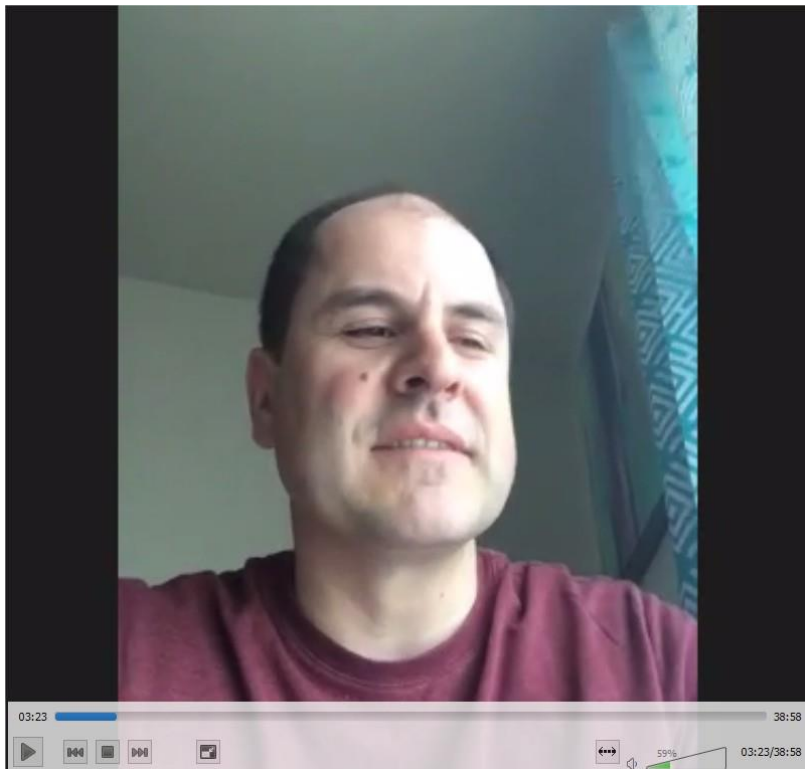
So basically, my [unintelligible] in this project is that we're not trying to help some little company try to get better, what [2sec pause] we're more about [1sec pause] hmm..  
hmm.. looking at a well-established company and how their [1sec pause] their values align with their actions, I guess [2sec pause] basically and [1sec pause] you know, how their reputation is set, so [4sec pause] I'm [1sec pause] yeah mine definitely [1sec pause] mine wasn't a good choice [4sec pause]

**G2S1 03:35 - 03:39**



Well, I think that mine is also a little bit basic [1sec pause] but we can [1sec pause] hmm.. we can go through it [2sec pause] and X, are you gonna take notes throughout this meeting?

Figure 11. Example of multimodality (G2M3)



The latest example provided in this section is related to the information about group number 3. It is important to remark that there were some controversies in this team, which sometimes made difficult the proper functionality of the meetings. Therefore, the context is important in order to consider the data specified in Table 8 and Table 9. On the one hand, generally speaking, participants manifested a passive behavior regarding the meetings and the development of the final project. Contrary to previous groups, there is a lack of motivation which is highlighted by large moments of silence (more than 1 minute). Additionally, it seems that not even in the final meeting the participants had a clearer idea of how to develop the project (this is exemplified in Figure 12) and in some

situations the members of the team executed their tasks inaccurately. Therefore, the results of this study are not surprising if we bear in mind the context. Taking into consideration the percentages of this group, data shows that there is an increase in the number of pauses from the first meeting until the final meeting. The highest point of the pauses ranging from 1 to 3 seconds occurs in the final meeting, with a result of 41,49%, whereas the highlight of the pauses from 4 seconds to 6 seconds arises during the fourth meeting, with an outcome of 15,74%.

Table 8. Total number of pauses per meeting in G3

TOTAL N. PAUSES PER MEETING (G3)					
	MEETING 1	MEETING 2	MEETING 3	MEETING 4	MEETING 5
Pauses 1-3 sec	149 (30,92%)	300 (20,90%)	302 (37,59%)	259 (32,52%)	250 (41,49%)
Pauses 4-6 sec	20 (8,46%)	39 (8,27%)	34 (9,54%)	50 (15,74%)	20 (8,18%)
MEETING TIME	16:33	39:05	26:55	23:56	20:22

As it was previously mentioned, the circumstances in the meetings influenced on the significant percentages illustrated in Table 8 and Table 9. In order to validate the quantitative results, Figure 12 serves as an example of the transcript of the fifth meeting. In this passage we can observe one pause that lasts 6 seconds marked in green color following a long moment of silence of 4 minutes and 26 seconds. After this long moment of silence S2 hesitates in the formulation of a confusing question. Note the question highlighted in green color, where the adverb “so” is followed by 6 seconds of pause, the repetition of the insert “like” and the utilization of “everything”, which in this case functions also as an insert. The answer of S1 is marked by the lengthening (highlighted in grey color) of the preposition “of” and the lowering of the pitch, which serves to indicate the misunderstanding of the question. Surprisingly, the conversation continues with several occurrences of lengthening, such as “Just if it has to be APA or”, “Oh shit [1sec pause] I didn’t think about that [2sec pause] I, I [3sec pause] I don’t know our professor didn’t really say anything about that” and “I think that we should just [2sec

pause] cite them just in case”. In order to understand the situation properly, this dysfluent feature needs to be accompanied by a multimodal analysis, in this circumstance by mentioning the pitch. In the case of “Just if it has to be APA or” the pitch decreases, which implies an incomplete sentence with the expectation that other people complete it. Whereas in the answer “Oh shit” the pitch rises, which indicates a surprise. This exclamation is preceded by the repetition of the personal pronoun “I”: “I didn’t think about that [2sec pause] II, I [3sec pause]” in which the pitch seems to be balanced. The reiteration and the lengthening of “I” implies doubt. Finally, the last lengthening occurs near the end of the transcript: “cite them just in case”, where the pitch rises to indicate confirmation from other people. Considering that the lengthening is generally followed or preceded by short pauses, we assume that it communicates an attitude of thoughtfulness.

Figure 12. Example of transcript in meeting 5

**G3M5**

**[4 minutes 26 sec of silence]**

**G3S2 [15:36 - 15:50]**

So [6sec pause] do we have like [1sec pause] a specific way of editing [1sec pause] like [1sec pause] presentations and everything?

**G3S1 [15:50 - 15:53]**

Specific way oof

**[interruption]**

**G3S2 [15:53 - 15:56]**

Just if it has to be APA oor

**G3S1 [15:56 - 16:06]**

Ohh shit [1sec pause] I didn't think about that [2sec pause] II, I [3sec pause] I don't know our professor didn't really say anything about that

**G3S2 [16:06 - 16:09]**

Mine neither that's why I'm wondering [1sec pause]

**G3S1 [16:10 - 16:25]**

I think, I think that as it's our analysis [2sec pause] I'm not like [2sec pause] we're not really [3sec pause] we're just kinda examining what to put out there [2sec pause] it'd be kinda hard like [3sec pause] cite like a tweet [2sec pause] I don't know [2sec pause] or an Instagram post [3sec pause]

**G3S2 [16:28 - 16:29]**

Yeah hmm

[overlapping]

**G3S1 [16:28 - 16:29]**

I guess [1sec pause]

**G3S2 [16:31 - 16:34]**

I think that we should just [2sec pause] cite them just in caase

**G3S1 [16:34 - 16:34]**

Okay [1sec pause]

**G3S2 [16:35 - 16:39]**

Like [1sec pause] I could go through that after doing it [2sec pause] it's not a big deal

The information in Table 9 reflects the pauses per minute during the five meetings held by the members of the third group. As in previous examples, we have distinguished between pauses that lasted 1 to 3 seconds from pauses that lasted 4 to 6 seconds. Data shows that there is an exponential increase in the number of pauses per minute ranging

from 1 to 3 seconds, which presents its highest point in the fifth meeting. In other words, 12,27 pauses from 1 to 3 seconds occur in a minute. On the other hand, pauses ranging from 4 to 6 seconds find its culminating point in meeting number 4, where 2,09 pauses occur in a minute. The following formula was employed in order to calculate pauses per minute, ranging from 4 to 6 seconds in meeting number 4:  $250/20:22*01:00$ . As mentioned previously, the observation of the virtual meetings held by this group suggests that the motivation of the participants in this project plays a crucial factor in interpreting data. It must be noted that there is no evidence that all the participants coincide altogether in none of the meetings, and thus, the planification of the project was principally based on asynchronous communication in the forum.

Table 9. Pauses per minute in G3

	GROUP 3 PAUSES PER MINUTE					
	MEETING 1	MEETING 2	MEETING 3	Meeting 4	MEETING 5	TOTAL
Pauses 1-3 sec	9,00	7,68	11,22	10,82	12,27	9,93
Pauses 4-6 sec	1,21	1,00	1,26	2,09	0,98	1,28
<b>TOTAL</b>	<b>10,21</b>	<b>8,67</b>	<b>12,48</b>	<b>12,91</b>	<b>13,26</b>	<b>11,22</b>

Figure 13 serves to illustrate data in previous tables from group number 3. Accordingly, we provide an excerpt of the transcription of the fourth meeting in which we focus on long pauses (from 4 to 6 in this case). Short pauses are marked in green color, while long pauses are highlighted in red color. There are four moments in which the members of the team employ long pauses. We notice that the initial conversation starts with a small talk (about weather and the university) and ends directly to the point of the meeting. Therefore, the subject matter of the meeting is introduced by a 6 seconds pause. What is more, it seems that S5 presents some difficulties when introducing the small talk, however, we find that when describing the task, he employs shorter pauses. Consequently, we can assume that S5, although fluent in English, exhibits several moments of long

pauses which might imply embarrassment or discomfort. On the other hand, S4 utilizes a 4 seconds pause, highlighted in blue in the text, in order to evaluate the proper answer.

It is important to note that there are two dysfluent features that accompanies short pauses, lengthening (marked in grey) and repetition (highlighted in yellow). The former, “coming or” verbalized in a lowering pitch followed by a short pause indicates that the speaker was waiting for other members of the team to give an answer. The latter, “Cool [3sec pause] I love, I love Utah State yeah [3sec pause]” occurs at the end of the first noun phrase and marks the beginning of the following noun phrase.

Figure 13. Example of transcript in meeting 4

**G3M4**

**G3S4 [00:59- 01:02]**

It's snowing down there

**G3S5 [01:02 - 01:09]**

Oh yeah [1sec pause] it is [4sec pause] are you in Logan?

**G3S4 [01:09 - 01:10]**

Yeah

**G3S5 [01:10 - 01:19]**

Yeah [4sec pause] yes, I went to UTC till [1sec pause] last semester [1sec pause] I just transferred. I was there for three semesters

**G3S4[01:20 - 01:20]**

Yeah?

**G3S5 [01:20 - 01:22]**

Yeah, do you live in the campus?

**G3S4 [01:22 - 01:30]**

No [4sec pause] it's [2sec pause] near

**G3S5 [01:30 - 01:37]**

Cool [3sec pause] I love, I love Utah State yeah [3sec pause] I couldn't stay more there, it makes more sense to come down here [6sec pause]

**G3S4 [01:43 - 01:44]**

It's [unintelligible] coming oor [1sec pause]

**G3S5 [01:45 - 03:04]**

Hmm [3sec pause] hmm so far so good hmm [4sec pause] I think [laughs] it's taking some kind of preliminary [1sec pause] me looking at their Facebook page and looking at their like accessibility and like [1sec pause] how they find their customers to their Facebook page and stuff and [2sec pause] I think the video is pretty [cough] making a pretty good job promoting their [2sec pause] how's called it? [1sec pause] oh [1sec pause] promoting their Facebook pages on their website [1sec pause] you can go to a certain page just in their website and there they have a link to every social media profile [2sec pause] a good idea

### 3.1.3. Occurrences per group

In studying silences during virtual conferences, it was found, interestingly, that the total number of pauses per group exhibited a similar result. Data in Table 10 indicates that group number 1 and group number 4, which experienced four meetings to complete the project, employed 29,22% and 26,75% respectively, of the duration of the meetings in pauses ranging from 1 to 3 seconds. On the other hand, group 1 employed 7,17% and group 4 utilized 6,95% of the total duration of the meeting on long pauses (from 4 to 6 seconds). Likewise, we found that groups which performed five meetings such as the case of group 2, present the lowest rate of pauses of all groups. In contrast, group number 3, which completed five meetings as well, exhibits the highest rate of pauses of all groups.

Additionally, taking into account the quantitative study, it is obvious that pauses from 1 to 3 seconds are more frequent than the rest of the pauses, showing dissimilar percentages as in the case of group number three: 31,24% (from 1 to 3 seconds) versus 10,62% (from 4 to 6 seconds). Generally, it seems that, in some groups, pauses are generated during speaker's long interventions and, in other groups, they are produced according to speakers' attitude or fluency among other factors.

Table 10. Total number of pauses per group

TOTAL N. PAUSES PER GROUP				
	Group 1	Group 2	Group 3	Group 4
Pauses 1-3 sec	998 (29,22%)	1226 (25,11%)	1260 (31,24%)	970 (26,75%)
Pauses 4-6 sec	102 (7,17%)	113 (6,04%)	173 (10,62%)	96 (6,95%)

### 3.2. Collocation

After examining the duration of silences during virtual meetings, we focus now on the location. Hence, in addition to the quantitative analysis of silence during twenty meetings, held by international students in the VBP project, we focused on the examination of silences from a psycholinguistic perspective. In order to illustrate accurate examples of our findings, we have divided pauses from 1 to 3 seconds from pauses ranging 4 to 6 seconds. The graphs are the result of calculating the total number of pauses without distinguishing groups or meetings. Both graphs represent nouns, pronouns, verbs, adverbs, conjunctions and inserts before and after silence. Additionally, after each graph we illustrate an example by analyzing one excerpt of the transcript of a meeting.

#### 3.2.1. Pauses 1-3 seconds

First of all, Figure 14 displays the information related to the six parts of speech before and after short pauses (1 to 3 seconds). Green color represents parts of speech before short pauses, while blue color illustrates parts of speech after short pauses. Considering data



from the bar chart we observe that there are two similar situations in which the location of the silence is not relevant, that is, nouns and adverbs. These parts of speech do not present an important distinction; thus, silence was employed indiscriminately. On the other hand, verbs and conjunctions display to some extent similar results. In the case of verbs, they occurred more frequently before the pause (1441 occurrences) than after the pause (948 occurrences). When it comes to conjunctions, the results are conversely; conjunction materialized more frequently after the pause (1680 occurrences) than before the pause (1224 occurrences). Finally, inserts and pronouns exhibit high difference in the location of silence. On the one hand, inserts show a distribution of 2880 occurrences before pauses and 1740 occurrences after pauses. On the other hand, pronouns present 480 occurrences before pauses and 2376 occurrences after pauses. Hence, pronouns before pauses are the least frequent part of speech, whereas inserts before pauses are the most frequent part of speech.

In analyzing the virtual meetings, we found that the most frequent pronoun employed is the personal pronoun “I”, followed by “we”. This suggests that if the purpose of the project was to gather people to collaborate in virtual teamwork, this result shows a more individualist behavior towards the team. Additionally, considering the spontaneity and the assumed informality of the meetings it is not surprising the high frequency of inserts such as “like”, and “you know”.

Figure 14. General data from 1 to 3 seconds

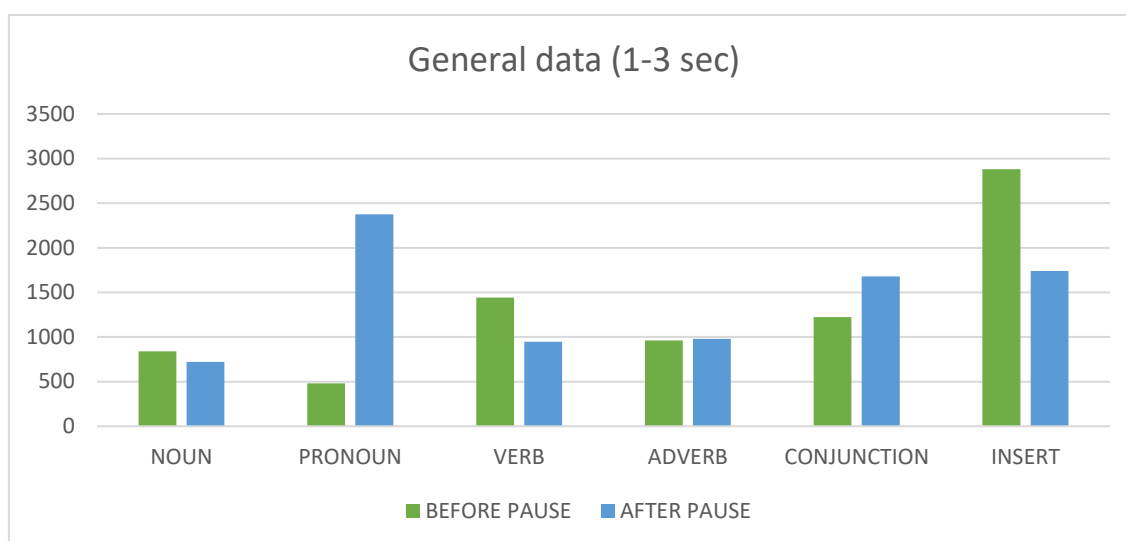


Figure 15 is an example of the collocation of silence during the second meeting of the first group. We have selected this excerpt due to the high frequency of inserts during the conversation. Additionally, in order to verify the theory proposed by researches on psycholinguistic approach, we need to analyze syntactically the most relevant sections of the transcript.

“**Yeah, like** I feel that if we're all **like** on the same page, doing our part and **like** [2sec pause] what rules do we need?, but I guess **like** [1sec pause] **like** [3sec pause] effective communication and [1sec pause] **like** [2sec pause] active participation, and **like** [2sec pause] clear, clear and constant communication.”

First of all, it is important to remark that the syntactic analysis of conversations is more complex than other discourse and in some situations, functions are not clear. For instance, in this sentence we observe the use of seven “like” functioning as inserts. The first pause is followed by a rhetorical question, which is connected to the previous idea. The following noun phrases are examples of the same idea, which are introduced by the

insert “like”. At the end of the sentence the adjective “clear” is repeated twice serving as a dysfluent feature of the speech act.

“**Yeah**, I [1sec pause] I definitely think that checking the forum **like** at least [2sec pause] once a day [1sec pause] it's **like** [1sec pause] should be a thing.”

This sentence is introduced by the adverb “yeah”, which is followed by the personal pronoun “I”, a short pause, the repetition of “I” and a complex verb phrase. The employment of the adverb “definitely” emphasizes the use of “yeah” to express agreement with the previous idea. Additionally, the short pause in between the personal pronouns indicates that the speaker employed a false start. The second pause is introduced by the insert “like” to exemplify the previous idea. It is followed by an adverb phrase, another short pause and a false start which introduces the last pause employing the insert “like”. Additionally, the sentence “should be a thing” is an example of vague language, which allows speakers to sound less direct.

“**Yeah**, or maybe like email or [1sec pause] will work better [2sec pause] I don't know [2sec pause] I think that GroupMe works better since it's on your phone and it's really quick.”

As in previous examples, this sentence is introduced by the adverb “yeah”, however in this case the speaker adds the adverb “or maybe” in order to express a doubt regarding the previous mentioned idea. This is the reason to use the conjunction “or” followed by a short pause and the incomplete verb phrase which ends in the comparative “better”. Interestingly, there appears a short pause and the negative sentence “I don't know” followed by another short pause and a proposal. We can infer in this situation that the pauses were intentionally employed in order to sound less direct.

Figure 15. Example of collocations group 1 meeting 2

**G1M2**

**G1S1 [06:40 - 06:59]**

Yeah, like I feel that if we're all like on the same page, doing our part and like [2sec pause] what rules do we need?, but I guess like [1sec pause] like [3sec pause] effective communication and [1sec pause] like [2sec pause] active participation, and like [2sec pause] clear, clear and constant communication

**G1S2 [06:59 - 07:18]**

So, what my teacher suggested for that communication is just that, she said that, everyone should just check like their forums like once a day...at least once per day, I guess to like make sure like you are on the task [2sec pause] and then, like a different form of communication also, so she said like GroupMe [2sec pause] and that's more for urgent stuff though

**G1S5 [07:18 - 07:27]**

Yeah, I [1sec pause] I definitely think that checking the forum like at least [2sec pause] once a day [1sec pause] it's like [1sec pause] should be a thing  
[.....]

**G1S5 [08:40 - 08:49]**

Yeah, or maybe like email or [1sec] will work better [2sec] I don't know [2sec] I think that GroupMe works better since it's on your phone and it's really quick

**G1S1 [08:49 - 08:51]**

Oh yeah, that's true, actually

**G1S2 [08:51 - 09:02]**

But I think [1sec] I'm not really sure about [2sec] if [1sec] it's kinda interesting but, I don't know if X can access to it, cause not all stores are the same, so

[.....]

**G1S1 [10:01 - 10:23]**

Yeah, that's **like** [3sec] **okay**, that's a big thing, especially since the editors, **like** [1sec] **I** [1sec] **I** [1sec] **definitely** assume that we're gonna need like a time **to** [2sec] **like** [1sec] **make sure** [1sec] **everything** sounds good, looks good **and** [1sec] **to submit** like in proper format, **so** [2sec] **I** would say like, I don't know if that's kinda stretch but I would say **like** [1sec] **at** least two days before due day

**G1S4 [10:23 - 10:24]**

Alright

**G1S5 [10:24 - 10:33]**

I **think** [3sec] **two** days it's fine 'cuz that means we need time to re-work it and editing can be kinda inept process depending on **like** [2sec] **everyone's skills** [4sec] **so**

**G1S1 [10:33 - 10:40]**

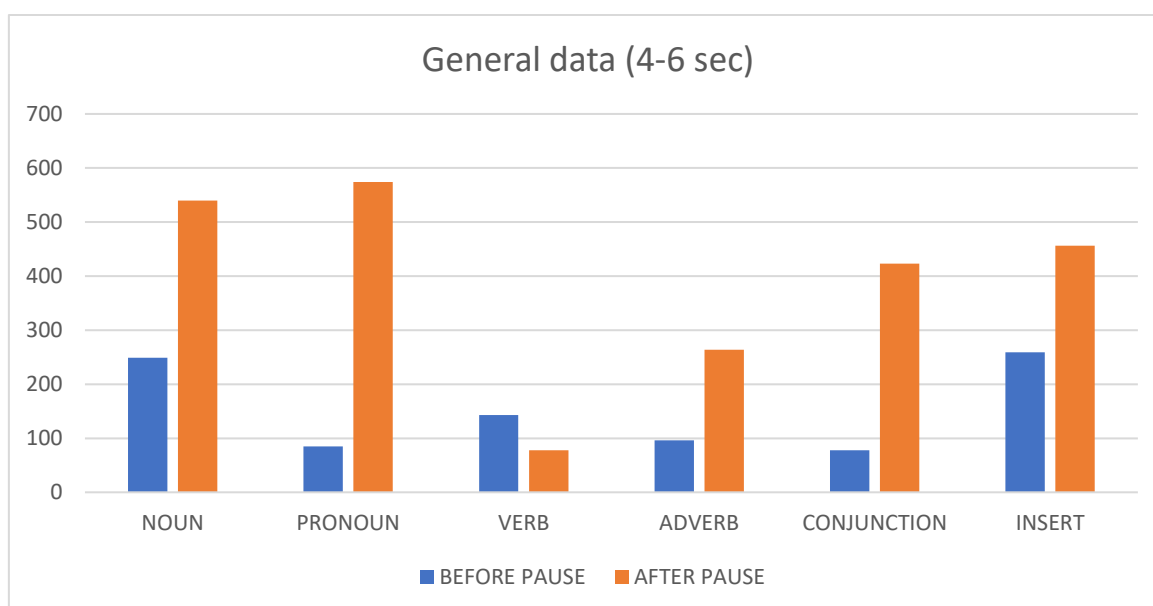
I feel **like** [2sec] **bigger** assignments we can do more than two days, and for more like small assignments we can need **like** [4sec] **one** day, depending just on the assignment, guys

### 3.2.2. Pauses 4-6 seconds

Unlike the graph in Figure 14, in Figure 16 data shows that when it comes to pauses ranging from 4 to 6 seconds, pauses occur more frequently before than after the several parts of the speech analyzed. Interestingly, there is a high difference in the collocation of the parts of the speech, and although further research is needed in order to confirm the rule, it should be noted that this is one of the contributions of this study. Information in the graph shows the occurrence of 249 nouns before pauses from 4 to 6 seconds, while the number of nouns after the pause increases up to 540. Regarding pronouns, we found

85 occurrences before the pauses and 574 after the pauses. On the contrary, verbs show an increment in the occurrences before the pause displaying 143, while after the pauses there are 78 occurrences. Regarding adverbs we found 96 occurrences before the pause and 264 occurrences after the pause. To conclude, conjunctions present 78 occurrences before the pause and an increment up to 423 occurrences after the pause. Finally, considering inserts we found 259 inserts before the pauses and 456 after the pauses. As observed, the case of the pronouns is the most outstanding, presenting a substantial difference in its use before and after silence.

Figure 16. General data from 4 to 6 seconds



The results of this study are not surprising if we bear in mind that longer pauses are generally used as boundary-marking pauses. Moreover, Figure 17 illustrates some examples of the appearance of long pauses in the first meeting of the second group. In order to confirm the statistics provided in the previous graph, we develop syntactic analysis of the most significant sentences which employ longer pauses.

Given the excerpt, we observe two situations in which two exclamations are followed by long silences. In first place, the discourse marker “okay”, which is used as a response token to indicate agreement with the previous answer, is followed by 4 seconds pause. This pause functions as a boundary-marking pause in order to highlight the end of the speakers’ transition. Likewise, we observe that the adverb “yeah” is followed by a 6 seconds pause which marks topic changing. However, when it comes to the employment of longer pauses in between the sentences, they function differently, such in the case of:

“I think that it's a team document that we are supposed to make, so, I'm making one right now [5sec pause] hmm...”

This sentence is formed by two complex verb phrases unified by the conjunction “so”, followed by a pause and a filled pause or hesitator. Taking into consideration the utilization of the adverbial of time “right now” followed by the longer pause, we can infer that S3 was creating a document at that moment. It is also interesting to note the filled pause following the pause, which in this case is not uttered in order to allocate time to verbalize an idea, but to avoid the long moment of silence that was created unintentionally.

The following examples is related to the location of silence in between two questions, the first one:

“So, are we going to schedule like a regular meeting? [4sec pause] date and time?”

This pause is located after a noun phrase and before an apposition. This indicates that after formulating the first question without succeeding in the release of the turn taking, which is marked by a long pause, S1 adds more information to the previous question by means of the apposition “date and time”.

Whereas the second sentence, although similar to the previous example, we find that the formulation of the second question is complete. The student remained silent a prudent moment of time in order to obtain the answer to the first question. When acknowledging doubt in the team members, he proceeds to formulate a less direct question in order to avoid conflict.

“what about if we met hmm...at 11pm? [4sec pause] It's possible for you or do you have any problem?”

On the other hand, the following example indicates that the pause in the middle of the sentence functions as a moment of reflection, communicating an attitude of thoughtfulness.



“I'm thinking about [4sec pause] future meetings and [3sec pause] should have some problems at the end [2sec pause] of the, in the, 5th session I think, because [2sec pause] I'm not here, so, I don't know what to do, but we can arrange that, [2sec pause] so, we can meet all Saturdays until that day and then we'll see how works for example, [2sec pause] if you want.”

This pause is preceded by an incomplete verb phrase where the preposition “about” functions as a modifier of the following noun phrase. The sentence ends with the conditional “if you want”. This complex verb phrase which is influenced by the pauses in between is an example of spontaneous language, given that the language used is vague. In order to avoid conflicts or misunderstandings, the speaker utilizes: “I don't know what to do”, “but we can arrange “or “if you want”. Hence, we can assume that the longer pause at the beginning of the sentence communicates a collaborative behavior from part of the speaker.

Figure 17. Example of transcript Group 2 Meeting 1

**G2M1**

**G2S3 01:02 - 01:18**

[Laughs] Alright, so, it's nice to meet everybody and put faces to names [2sec pause] hmm... so, what are we all supposed to do in this meeting? Is it just introductions and stuff? [2sec pause] or...

**G2S4 01:18 - 01:21**

Yeah, it's more or less introduction [2sec pause]

**G2S3 01:21 - 01:22**

**Okay** [4sec pause]

**G2S4 01:26 - 01:43**

I was reading the paper that they sent to us and [2sec pause] then we have to upload this video, this recording and we have to create a document, but I don't know if we have to create a document per person or just hmm... one document with all the information

**G2S3 01:43 - 01:59**

I think that it's a team document that we are supposed to make, so, I'm making one right now [5sec pause] hmm....

**G2S1 01:59 - 02:05**

Hmm... you know if X is online? Did he get this Zoom thing?

[.....]

**G2S4 03:33 - 03:33**

Yeah! [12sec pause]

**G2S1 03:45 - 03:51**

So, are we going to schedule like a regular meeting? [4sec pause] date and time?

[.....]

**G2S2 04:11 - 04:15**

Yeah, this works for me as well, so [3sec pause] yeah [3sec]

**G2S4 04:18 - 04:46**

I'm thinking about [4sec pause] future meetings and [3sec pause] should have some problems at the end [2sec pause] of the, in the, 5th session I think, because [2sec pause] I'm not here, so, I don't know what to do, but we can arrange that, [2sec pause] so, we can meet all Saturdays until that day and then we'll see how works for example, [2sec pause] if you want

**G2S1 04:47 - 04: 48**

Okay!

[.....]

**G2S3 05:05 - 05:09**

He's probably installing the software

**G2S1 05:09 - 05:15**

Yeah [6sec pause]

**G2S1 05:15 - 05:23**

So, shall we [2sec pause] talk about first paper that we read or...

[.....]

**G2S4 06:46 - 06:59**

I was thinking about the following week and [2sec pause] what about if we met

hmm...at 11pm? [4sec pause] It's possible for you or do you have any problem?

**G2S3 06:59 - 07:01**

11pm Easter time?

### 3.3. Communicative functions

Another contribution of this study to the linguistic environment is the employment of Jensen's (1973) communicative functions to online communication. The main purpose is to establish that technology and discourse maintain a symbiotic relationship. Since communication involves the interplay of various semiotic modes such as: spoken language, gesture, facial expression, head movement or gaze, researchers examining face-to-face interaction should go a step further to explore multimodality. Taking into consideration the ambiguous understanding of Jensen's taxonomy, a multimodal analysis is provided. Additionally, we identify the use of silence caused unintentionally if we consider the combination of short pauses and laughs as symbols of anxiety. Hence, it is

important to remark that when assigning function to silences, context should be taken into consideration.

### 3.3.1. Linkage function

Regarding the first group, it is remarkable to mention that one member of the team caused some difficult moments for the rest of the speakers during the third meeting. Given the assumed informality of the meeting, one of the students attended the meeting from a football match. This situation induced moments of involuntary silence by the rest of the team members. Therefore, it should be noted that due to the complexity of the context in the third meeting, the functions of silence could be altered. Taking into account the situation, we conclude that silences throughout this virtual meeting fulfill a linkage function. That is, silence can create connections between people or can separate them. For instance, Figure 19 captures an irritating moment (highlighted in yellow in Figure 18) in which the speaker voluntarily marks a longer pause in order to maintain the harmony of the meeting. Considering multimodality, the expression of students' face suggests disapproval with the context, which can lead to compromise the relationship between the participants. Additionally, regarding the following frame, we observe that the eyes looking up and left reflect disdain and the tight lips showing the teeth indicate anger.

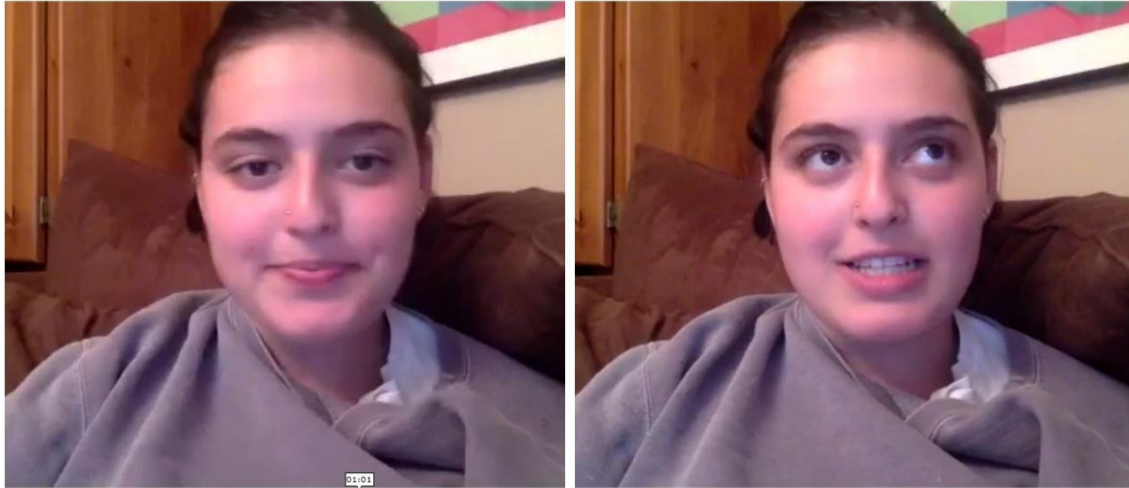
*Figure 18. Excerpt from transcript Group 1 Meeting 1*

**G1S1 [00:07-00:58]**

I did Airbnb and I picked it [1sec pause] because [2sec pause] they have a really good Instagram presence they have this hmm [2sec pause] thing that they have on their website called neighborhoods which is like a digital [2sec pause] and I thought that it was really cool [1sec pause] and [2sec pause] [noise] [4sec pause] like [2sec pause] I wanted to pick it for those reasons but also they faced a lot of pressure from the hotel

industry [2sec pause] and hmm.. like Municipal city councils because they were accused with like I guess probably illegal Airbnb and it's just like they disrupt the hotel industry like for obvious things so yeah it's like something to consider

Figure 19. Multimodal analysis linkage function



### 3.3.2. Affecting function

On the other hand, silence has the power to affect people, positively or negatively. In Figure 20 we observe that S1 from group 3 marks a short pause during the fifth meeting in order to introduce a negative comment about one of her teammates. This reaction is corroborated by her facial expression illustrated in Figure 21: the slight movement of the head from right to front position, the tight position of the mouth which indicates anger, the eyes moving from the left corner to front and most importantly the wrinkles in her forehead. The movement of the head from right to front is also notable, indicating determination and a strong personality, that is, it reflects a person who faces problems directly. An example of this is the utilization of: “she did it like not how my teacher told us” and the addition of a sarcastic comment following a long pause: “supposed to be like [5sec pause] part of the report”.

Figure 20. Excerpt from transcript Group 3 Meeting 5

**G3M5**

**G3S1 [01:08 – 01:32]**

Yeah she did the introduction but [2sec pause] she did it like not how my teacher [1sec pause] told us we should do it [2sec pause] like introductions like supposed to be like [5sec pause] part of the report [1sec pause] what does the report do.

Figure 21. Multimodal analysis affecting function



### 3.3.3. Revelational function

Another interesting function which can be applied to online communication is the revelational function. As reported by Jensen (1973) when a person in a small group remains silent, he or she might perform a revelational communicative function because it often implies that the person is lacking knowledge or information of the particular subject discussed. Figure 23 captures the moment in which one of the members of the team remains silent when indirectly being asked a question. What is more, Figure 22 highlights the moment in which the student does not answer the question asked by S5. The facial

expression indicates lack of knowledge on the question, especially considering the opening of her eyes.

Figure 22. Excerpt of transcript Group 2 Meeting 4

**G2M4**

**G2S5 07:17 – 07:19**

Am I the only one hearing that noise or [1sec pause] is that wind?

**G2S2 07:20 – 07: 23**

[laugh] I hear that too

**G2S3 07:23 – 07: 25**

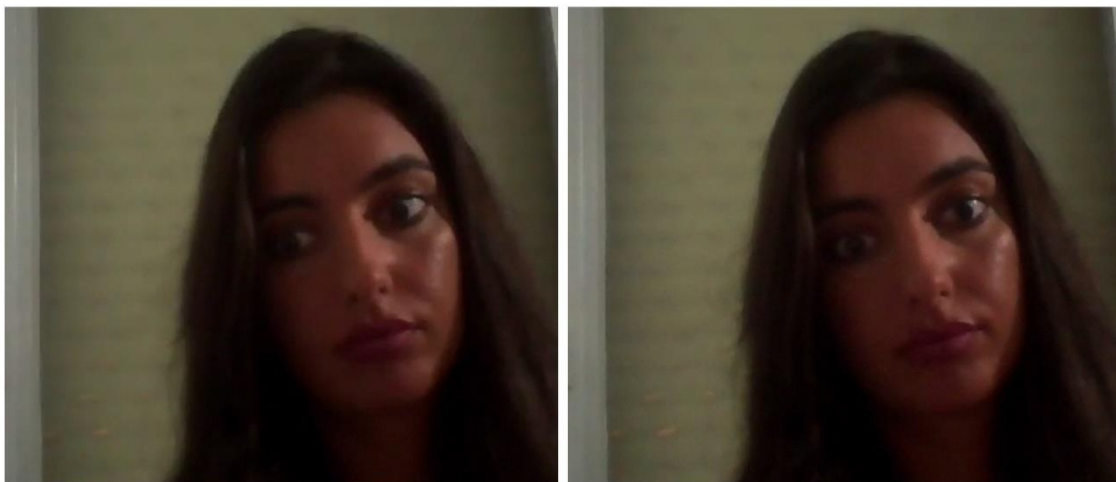
Yeah [1sec pause] I hear that too [1sec pause]

**G2S1 07:27 – 07:29**

It's like traffic?

**[6sec pause]**

Figure 23. Multimodal analysis revelational function



### 3.3.4. Judgmental functions

Silence may also accomplish judgmental functions in the communicative acts. Silence is employed to express agreement or disagreement with what someone else has said. It is important to mention that no capture could be provided in this situation due to the significance of the function. Nevertheless, Figure 24 illustrates the reiterated moments in which S1 provides an explanation for each issue encountered and except for S2, who agrees openly with the answer, the rest of the members of the team remain silent. Thus, communicating a passive attitude assuming the answers provided.

Figure 24. Excerpt of transcript Group 1 Meeting 2

**G1M2**

**G1S2 [00:27 - 00:28]**

I think that identify as a group

**G1S1 [00:28 - 00:54]**

Hmm... I mean like, I guess, the purpose of this project is that we all [**3sec pause**] are from different backgrounds and places and I guess that the purpose of this assignment is to work together and like combine our strengths and collaborate... hmmm... I don't know [**2sec pause**] this would be the purpose to write our report [**2sec pause**] and do the best we can

**G1S2 [00:54 [writing] 01:05]**

**Alright**, and the team goal?

**G1S1 [01:05 - 01:56]**

Hmmm... work on our collaborative skills [writing] [**10sec pause**] 'cuz I think that virtual [**2sec pause**] like [**3sec pause**] virtual group work is the future of business and communication. Put in the chart that we're learning a new way of communication 'cuz



this is the first time I use this program [**writing**] I guess like work together  
[**interruption**]

**G1S2 [01:56 - 01:59]**

**Alright**, and the roles [**2sec pause**] hmmm...

**G1S1 [01:59 - 02:03]**

That's gonna be tricky because hmmm... [**interruption**]

**G1S2 02:03 - 02:05**

**Yeah**, that's gonna be hard [**interruption**]

**G1S1 02:05 - 02:35**

I guess that we just gonna establish like what we feel [**3sec pause**] about our strengths or our skills and [**2sec pause**] in terms of the project like [**2sec pause**] they're also like [**2sec pause**] so, I wrote some roles [**2sec pause**] hmmm... so, Sam, I guess you're like the meeting coordinator...

**G1S2 02:35 - 02:35**

**Okay!**

### 3.3.5. Activating function

According to Jensen's taxonomy (1973) silence accomplishes an activating function in the communicative performance. During the fourth meeting of the second group, highlighted in Figure 25, S2 introduces a small talk related to some webpages that seemed to be interesting. In other words, the short pauses of the second speaker before choosing certain words may insinuate a reflective mind searching for a specific phrasing. The activating function is manifested when S2 reflects upon the products which might be encountered in the previously mentioned webpages. This reflection, represented in Figure 26, is remarked by the movement of the head and the eyes from front to up communicating

an attitude of thoughtfulness. Additionally, we assume that the mentioned webpages produce positive influence on him because the corners of his mouth reveal a smile. This smile turns to laughter at the end of his intervention.

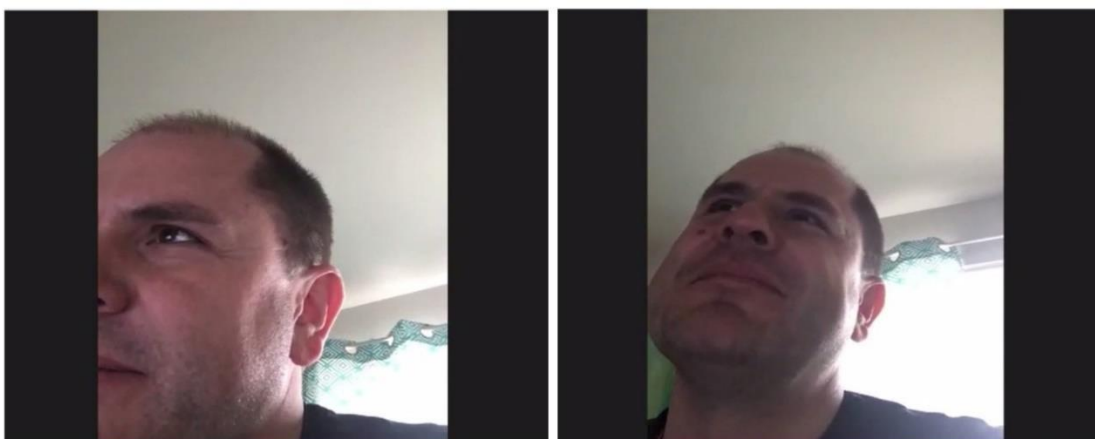
Figure 25. Excerpt of transcript Group 2 Meeting 4

**G2M4**

**G2S2 01:07 – 02:02**

So, if you're interested in checking them out one is the Hoodie pillow [3sec pause] Hoodiepillow.com [1sec pause] hmm.. there is a bakery with crunchy cookies cuz we all love them the ones in that are crunchy, thebakery.com [1sec pause] ring.com it's like someone comes and rings your doorbell and you can actually can have a conversation with whoever it is [unintelligible] [2sec pause] hmm.. the one called thewickedgoodcookies.com cupcakes are in a jar, pretty awesome hmm... knitchicks.com [1sec pause] oh it was that one [1sec pause] knitchicks.com [2sec pause] knit chicks and then chips, chips made out of like hmm... [1sec pause] crickets and [2sec pause] tarantulas and stuff like that [laughs]

Figure 26. Multimodal analysis activating function



## 4. Conclusion

The results of the present study add to the weight of evidence that analyzing spontaneous speech in online communication is difficult, thus it is even more problematic to identify and analyze silence.

Although data provided illustrates that the total occurrences of pauses per group is relatively similar, there are several issues which need to be considered. It appears that the frequency in the use of silence in the several meetings and groups depends on several factors such as the context or circumstance of each meeting and each group. For instance, a possible interpretation of the occurrences of longer pauses is that members of the teams needed time to become familiar with the platform and with the rest of the members of their teams. Moreover, it appears that longer pauses are produced in moments of transition from one topic to another, and since the meetings were held online, the participants in some occasions could read or write at the moment of speech. Although the activities related to the project involved the participation of all members, there are some situations in which lack of motivation and an individualist behavior mark the path of the meetings. These factors together with the malfunctioning of Internet connection may have influenced on the duration of the silences. On the contrary, in line with Chafe (1985) when it comes to shorter pauses, its high frequency might be related to moments of reflection on what and how to verbalize things. Finally, although students participating in the VBP project performed an advanced level of English, there is a difference on fluency performed by native speakers and non-native speakers. Therefore, the duration of silence in some cases is related to language use. It might be appropriate for future research to look into the analysis of the data provided in this study from a linguistic perspective.

This study also indicates that there are few differences between the number of silences used in the different groups. Additionally, there are no significant contrastive results when distinguishing between groups that performed four meetings and groups that performed five meetings. What is remarkable is that the duration of silences during the meetings are affected or influenced by external factors. Thus, we can infer that silence is used indiscriminately. However, we notice that silence presents a certain pattern when it comes to the location of the parts of the speech after the pause. Findings in this study demonstrate that unlike pauses ranging from 1 to 3 seconds, pauses from 4 to 6 seconds tend to follow a pattern, that is, there is a high percentage of parts of speech which occur after the pause. Clearly, future research should also consider these results in order to investigate the impact of silence from a psycholinguistic perspective. These findings are intuitively appealing, because it marks the path for further research.

This study's findings are quite consistent with previous researchers. According to Norris (2004), communication can be explored from a multimodal interactional perspective. Interestingly, in line with these studies we found that multimodality helps in the identification and classification of the communicative functions of silence. Perhaps a reason why multimodality is significant in this study is that, as in many other situations, context is meaningful. In examining the communicative functions according to Jensen's taxonomy (1973), results suggest that in order to classify silence we need to be aware of body language as well. In line with Jensen (1973), the results indicate that the classification of the five communicative functions of silence is similar when attending virtual conferences. Thus, Jensen's functions of silence can be applied to online meetings. However, as mentioned previously, we cannot understand the use of silence without taking into consideration other factors, and in this case, multimodality is needed.

The present study has some limitations, and the recognition of these should help refine future research efforts. First, it is important to address the sociocultural aspect. The results are limited to students that are culturally related regarding the consideration of silence. Second, a homogenous student model was used in relation to age and profession, so any generalizations should be made with caution. However, this does not compromise the study's internal validity, because there is no reason to believe this fact would have substantially affected the results.

Despite the above limitations, the research findings demonstrate that non-verbal communication, especially silence, plays an important role in the overall interpersonal exchange during virtual conferences. By identifying silence and categorizing its communicative functions of silence, we acknowledge the necessity to obtain more significant data regarding the relevance of silence in new technologies.

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