A study on the effects of nativeness and gender on phonetic convergence in a tape-mediated map task

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A Thesis Submitted in Partial Fulfilment of the Requirement for

the Master's Degree in Applied Linguistics and Language Acquisition

in Multilingual Contexts, Universitat de Barcelona

July, 2012

ACKNOWLEDGMENTS

I dedicate this thesis to my parents and my sister for unconditionally supporting me in the pursuit of my objectives.

My thanks go to Dr. Joan Carles Mora, the supervisor of this thesis, who has given me great advice and insights. His professional opinions have been of crucial importance to me in the process of writing this thesis.

Thanks to Dr. Ana Ma. Fernández Planas (UB) and to Dr. Joaquín Romero Gallego (URV) for their help during the recording sessions.

My thanks to the informants (Francesca, Matthew, Elisa and Cristian) and to the participants for their collaboration and participation in the task.

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ABSTRACT

Previous studies examining phonetic convergence in terms of VOT adaptation in shadowing tasks and in interactions have found that such adaptation is highly influenced by social factors as nativeness and gender. Speakers adapted more and produced longer VOTs when the interlocutors' VOTs were longer (Nielsen, 2011); however, Kim (2011) found that speakers adapted to both non-native and to native interlocutors. Studies focusing on same gender dyads found that female speakers have been found to converge more (Pardo, 2006) whereas Namy et.al (2002) found that male speakers adapted more often. This study assesses the convergence of 26 speakers' productions of nonwords and words in terms of VOTs in a map task (Pardo, 2006) before (Time 1) and after (Time 2) a tape-mediated interaction (Lumley and O'Sullivan, 2005); in particular the effects of interlocutors' nativeness and gender on speakers' degree of convergence. Participants' productions presented large variability which is in line with previous findings (Theodore et al, 2009; Allen, 2003; Pardo, 2006). Results show that the treatment had no effects; as little convergence was found for some but not all of the VOT measurements. Nativeness and gender did not have significant effects on VOT adaptation when the group of participants was considered as a whole, but some phonetic convergence was observed for some of the participants' productions.

1. INTRODUCTION

Speakers' ability to modify their oral productions in order to adjust to their interlocutors is a strategy to establish themselves in the conversational space (Bulatov, 2009). Several studies have found that native speakers can modify their accents by accentuating the differences between them and their interlocutors in order to maintain their identities or by adapting to their interlocutors in order to be included in the interlocutors' social or linguistic group. (Bourhis and Giles, 1977; (Giles et al.,1973) Other studies show accommodation of people from a lower social status to interlocutors of a higher status (Gregory and Webster, 1996), indicating that accommodation increases the quality of an interaction.

In the field of second and foreign language acquisition this ability is important for learning as imitation of native speakers' speech might lead to a more appropriate categorization and production of the sounds of that language (Flege. 1998) and also to a decrease in the social distance between non-native speakers and native interlocutors. (Giles and Coupland, 1991) Phonetic convergence interacts with several social variables: nativeness and gender, among others, and VOT as a measure of phonetic convergence is affected by several contextual factors such as place of articulation, speech rate and lexical frequency. (Flege, 1998; Nielsen, 2011; Chao and Chen, 2008) There is plenty of evidence in the literature that shows the changeability of VOT in respect to nativeness and gender (Nielsen, 2011; Kim, 2011; Pardo, 2006; Namy at al., 2002) and also to the learning experience as studies show that intensive exposure in study abroad contexts and perceptual training lead to an increase of VOT to values within the range of native speakers. (Mora, 2008; Aliaga and Mora, 2007)

1.1. Communication Accommodation Theory (CAT)

The Communication Accommodation Theory (CAT) as defined by Bulatov (2009) and Giles and Coupland (1991) refers to the function of language through which speakers situate themselves in society in order to be accepted in it. CAT defines the ways in which language works and is used by individuals in order to define their identities in respect to the group they want to belong to by adapting their speech to that of their interlocutors.

An important distinction needs to be made within CAT between convergence and accommodation. Accommodation is understood as the adjustment of the communication

actions used by the interlocutors in a more general way. Convergence, however, refers more specifically to the adjustment in terms of "linguistic, prosodic and non-verbal features" (Giles and Coupland, 1991:63). In the present study, phonetic convergence will be examined and tested.

1.2. VOT as a measure of phonetic convergence

Several studies have examined phonetic convergence using different methodologies and different linguistic features. Because phonetic convergence refers to the adjustment to specific linguistic/phonetic features rather than general communicative traits, VOT has been used as a measure of that convergence. Laryngeal timing has been shown to be sensitive to input and experience-related factors. VOT is a salient feature due to its difference in length in Spanish (short-lag range 0–30 ms) and in English (long VOTs range 40-80 ms). (Mora, 2008)

Previous studies have found VOT to be a malleable feature: Mora (2008) found VOT changes in students after their study abroad experience due to intensive and regular exposure to English. The adaptation to natives was not permanent as post-tests showed shorter VOTs after some time in the home country when such input was not constant. Aliaga and Mora (2007) found that phonetic and perceptual training in English VOTs improved L2 learners' VOT productions. No overall significant gains were found but longer VOTs for p and t were significant.

Lisker and Abr. (1964) defined VOT as a measure of voicing and its identification on spectrograms and sound waveforms. Voice Onset Time refers to the interval between the onset of the release burst and the start of laryngeal vibration which indicates voicing and the onset of the vowel. (Lisker and Abramson, 1964; 1967; Port and Rotunno, 1979; Chao and Chen, 2008; Pardo, 2006; Nielsen, 2011)

These studies examined the phonetic factors that affect the duration of VOTs. VOT values are known to be affected by the characteristics of each voiceless stop, place of articulation, but they are also affected by the phonetic environment: VOTs are longer when stops are followed by high and tense vowels than low and lax vowels, in monosyllabic words than longer words and in words in isolation than words in running speech. (Lisker and Abramson, 1967; Port and Rotunno, 1979; Chao and Chen, 2008; Flege et al. 1998)

Nielsen (2011) found that lexical frequency had an effect on the accuracy of imitation.

His findings reflected those by Goldinger (1998), as speakers in a shadowing task showed greater accuracy of imitation for low-frequency words than for high-frequency words, an effect that was present in males but not in females. Flege et al. (1998) found that lexical frequency was not having an effect in the VOTs of English /t/-words by Native Spanish speakers. The present study included nonwords in order to avoid lexical frequency effects. Words, presumably with a high frequency, were included in the analyses for comparison.

Speech rate has been identified as robustly affecting VOT productions (Theodore et al., 2009). Schmidt and Flege (1996) examined productions of /t/ and /p/ words in sentences at three different speaking rates by Spanish and English monolinguals and by Spanish and English bilinguals. VOTs were shorter in the productions of English monolinguals and early bilinguals as an effect of an increase of speaking rate. Spanish monolinguals showed an effect in the opposite direction and late bilinguals showed smaller speaking rate effects.

1.3. Social Factors affecting VOT convergence

Studies examining phonetic convergence have used the shadowing paradigm employed by Goldinger (1998) in order to assess imitation of productions after participants hear and repeat spoken words in isolation. The participants' productions are compared to baseline productions to observe any imitation effects. Pardo (2006) and Goldinger (1998) used AXB perceptual tasks and Nielsen (2011) used VOT measurements to assess convergence. Convergence was found in immediate-repetition contexts (Goldinger, 1998) but also in conversational interactions. In both cases, phonetic convergence is influenced by social factors, namely: gender (Pardo, 2006; Namy et al, 2002) and nativeness (Nielsen, 2011; Kim, 2011). Males have been found to converge more than females in same-gender dyads (Pardo, 2006) and females to converge more in different-gender dyads (Namy et al., 2002). Participants adapted to native speakers' VOTs but not to non-natives in Nielsen (2011) but Kim (2011) found convergence to both native and non-native speakers.

Namy et al. (2002) examined gender differences in the production and perception of words regarding vocal accommodation. Male and female participants repeated isolated words read by male and female speakers. Another group of participants, male and female, were asked to judge whether the participants' productions presented imitation towards the speakers' productions that were used as the baseline. Results showed that female participants

converged more than males and that they imitated more the male speakers. Males were found to converge equally to male and female speakers.

Pardo (2006) also looked at the effects of gender on phonetic convergence of participants in same-gender dyads performing a map task. The participants in the same dyad were assigned different roles (receiver and giver) as the maps contained differences. She found that the dyads converged 62% of the time. Contrary to Namy's results, males were found to converge more often than females. The role of the participants had an effect on convergence as males converged more to givers and females to receivers.

Nielsen (2011) found that participants' VOTs were significantly longer after they had been exposed to words with extended VOTs produced by an English native speaker. The imitation effect was found several minutes after the participants were exposed to the target speech and it was extended to novel words. Target speech with reduced VOTs was not imitated. Kim (2011) investigated phonetic convergence by native speakers after having been exposed to native and non-native speech. Contrary to previous results, participants showed imitation towards non-native speakers rather than towards native speakers.

Seeing that previous research on phonetic convergence has produced mixed results, the present study is intended to expand the research of phonetic convergence as measured by VOT length.

1.4. A different interaction paradigm

A common characteristic of previous studies is that researchers have examined phonetic convergence as a result of face-to-face interaction between the model speakers and the participants. In live interactions, other factors besides nativeness and gender can influence the performance of the participants: the rapport established between the interlocutors, the support shown to the participants, attitudes towards the speaker and individual differences like personal style and behavior. (Kim, 2011, Lumley and O'Sullivan, 2005)

Lumley and O'Sullivan (2005) examined the effects of test-taker gender, audience and topic on task performance in tape-mediated interactions. Participants were required to speak to a fictional interlocutor as only the researcher was present during testing time. Results showed that the type of task used in this study affected individuals differently and only limited evidence of the role of the factors on performance was found. Even though the results

were inconclusive, the researchers argued that even in tape-mediated interactions, with no interlocutor present, participants were regarding the stimulus as real communication.

According to Pardo (2006), there is a need for studies that examine the conditions of conversational settings that enhance or prevent phonetic convergence. The present study examined the role of two social variables, nativeness and gender, in order to see their effects on phonetic convergence by means of VOT measurements of nonwords and words before (Time 1) and after (Time 2) participants had completed a map task. Contrary to previous studies, the effects of the factors were examined in tape-mediated interactions.

2. RESEARCH QUESTIONS

The research questions this study addresses are the following:

1- Will the participants converge to their interlocutors in terms of changes in VOT length from Time 1 to Time 2 as a consequence of the treatment (tape-mediated map task)?

2- Will nativeness of the informants have any effect on the changes of participants' VOT values? Will participants who interacted with natives have longer VOTs at Time 2 than those who interacted with non-natives?

3- Will gender have any significant effects on the changes? Will participants in same-gender dyads show greater convergence than different-gender dyads?

A great variability in VOT length in the participants' productions is expected in line with previous findings. (Theodore et al. 2009; Allen, 2003; Pardo, 2006) Participants in the experimental group are expected to show longer VOTs in the target items as a result of the tape-mediated interaction than the control group, for which no great changes are expected. Nativeness is hypothesized to affect phonetic convergence to a greater extent than gender as the interlocutor is not present during the interaction. Gender might have a greater effect in face-to-face interaction as it modifies the attitudes of the participants towards the speakers as found in previous studies. (Pardo, 2006; Namy et al., 2002) Participants who interacted with native English speakers are expected to produce longer VOTs as a result of being exposed to longer VOT than those they normally produce. Imitation of the non-native English speakers is not expected to occur. (Flege, 1998; Nielsen, 2011)

3. METHOD

3.1. Participants

The task required two types of subjects: the informants (interlocutors) and the participants that performed the task.

The group of the informants was formed by four people. In order to comply with the variables examined in this study, nativeness and gender, two of the informants were English native speakers and the other two non-natives; and two of them were male and the other two female. The two native speakers of English were originally from England but had been living in Barcelona for some years (between 2 and 4). M is a male and F is a female, both 24 years of age, and both are teachers of English as a foreign language in schools and in language academies in Barcelona.

The other two informants were two Catalan/Spanish bilinguals. C is a male and E is a female and both are around 20-21 years old. They are advanced English learners who were finishing their third year of the English degree at university. These four informants were chosen as they fulfilled the requirements and were willing to participate in this experiment. The non-native informants surpassed the expectations of the researcher in the recording of the task in terms of VOT lengths which posed a problem that was solved partially. This will be discussed further in the materials section.

The participants were students of the English degree at Universitat de Barcelona. They were told that they were going to take part in a phonetics task as part of class activity for credit, but weren't informed of the real goals of the task and the linguistic feature that was going to be analyzed. The selection was random in order to obtain participants with different degrees of foreign accent and thus, differences in the production of VOT.

The number of participants who took part in the experiment was 26 (originally 27, though one was discarded as some parts of her recording were not audible). Before the participants were recruited, the number of participants thought for the task was 25 so that 5 participants could be assigned to each of the conditions: Native Male, Native Female, Non-Native Male, Non-Native Female and Control. The distribution of the participants was 3 male and 23 female and all were between 19 and 33 years old (mean age: 26). All the participants started to learn English at school when they were between 3 and 12 years old (mean age: 7.5). Even though there was a lot of variation in the age of onset, all of them started before or around puberty. There was only one exception: one participant in the control group was the oldest of

all the participants in the study (age 36) and she started learning English past puberty at the age of 17. All the participants were either Spanish/Catalan bilinguals or had Spanish as a second language as they had been living in Spain for a long time after migrating from another country, but considered themselves very proficient in Spanish. (just 3 cases). In Table 1, relevant data collected from the participants is presented.

	Participant	Age at testing	Age of Onset	Daily exposure to English natives*	Self-perceived English proficiency*	Self-perceived foreign accent*	Anxiety when speak in English*	Anxiety when recorded*
Exp.	J	26	9/10	4	4	4	6	6
	S	19	5	6	4	4	6	7
	R	20	8/9	4	5	5	4	3
	G	18	9	3	3	5	3	6
	A	21	6	3	4	4	4	6
	L	21	6	4	6	6	1	6
	M	19	3	5	6	3	2	3
	G	22	8	5	4	4	4	3
	C	19	3	6	6	7	2	7
	M	19	8	1	3	4	5	3
	M	21	6	4	5	5	3	5
	C	19	8	3	5	4	2	5
	O	19	5	7	5	4	4	4
	M	19	6	6	5	3	4	4
	E	26	10	6	6	5	5	6
	S	20	3	4	4	3	6	7
	A	32	6/7	5	5	5	1	1
	C	20	8	4	5	4	5	7
	E	20	7	3	4	4	6	6
	S	21	6	2	5	4	2	4
	A	23	6	6	5	2	1	1
control	M	36	17	2	4	2	-	-
	A	19	7	4	4	6	6	7
	G	22	12	3	4	6	5	4
	S	20	10	5	4	3	6	1
	M	19	4	3	5	2	3	4

Table 1. Some relevant information collected from the language background questionnaire.
*indicates that for these questions a 7-point scale was used. For the five scales, 1 represented the lowest value and 7 the highest value. For one participant in the control group, some data are missing from her questionnaire.

3.2. Materials

Aims of map task: participants were required to find a path in the map in order to get from the X to the end point (Toon) using the information in the map and in the passage by interacting with their interlocutors. The words used to label places in the map and used in the passage were 7 non-words and 7 real English words, all starting with a voiceless stop (p, t, k) so that VOTs produced in those words could be measured and analyzed to check for any adaptation to the interlocutors' VOTs from the recorded speech participants were listening to and interacting with.

3.2.1. Map task

In studies conducted on phonetic adaptation, most researchers directly present the target items to the participants and these are required to repeat the same words or rather, they are asked to listen to different repetitions of the same word in order to judge them in a perceptual task (AXB). In this study the main focus was on analyzing whether participants would phonetically convert to their interlocutors as a result of an interaction task with them. Due to time limitations, it was decided to use a tape-mediated interaction as used in Lumley and O'Sullivan (2005).

A map task was used in the present study as it has been used in studies analyzing VOT convergence. (Pardo, 2006) A map task would easily incorporate the interactive component, the target items which would be situated on the map; it would allow the participants to notice them before the interaction. It would allow for repetitions of the same target items by all the participants and it would make the participants to focus on the main goal of the task, finding a path, than in the actual goal of this study. The map was adapted from Ogane (1999) in his article about L2 listener problems and strategies during collaborative discourse as it was convenient for the present task: it had several landmarks that could be labeled with the target words and it already contained some real words that started with stops (p, k) that could be used as control words. The target items were randomly situated along the map each corresponding to a landmark.

The main difference between this map task and others used in these two studies is that the participants had the same map as the interlocutors in order to avoid any problems that could interfere in the completion of the task due to the fact that the interlocutors were not present. (see Appendix A)

3.2.2. Lexical items

The target words that would serve to measure changes in VOT as a consequence of the phonetic adaptation to the interlocutors needed to be produced under the same conditions for all the participants because of the VOT sensitivity to the context in which it occurs. (Lisker and Abramson,1964) The map task included a passage containing all the target words to make sure to obtain all the target words from all the participants.

Previous research on VOT has found that average VOT for each of the voiceless stop categories is significantly shorter in sentences than in isolated words (Lisker and Abramson,

1964). For this reason, the words had to comply with some rules in order to maximize the length of the VOT to compensate for the effect of the target items being in a passage and not in isolation.

Five of the seven nonwords were selected from Port and Rotunno (1979) as they complied with the rules to maximize the VOT (kun, tun, poon, toon and coon). Two more words (kawn and tawn) were designed using the same criteria in order to label the landmarks in the map. The seven nonwords began with one of the three voiceless stops (p, t, k), they were monosyllabic and ended in –n as previous research has demonstrated that VOTs are longer under these conditions. (Flege, 1998; Port and Rotunno, 1979; Lisker and Abramson, 1964; Chao and Chen, 2008). All these studies also found that VOTs are longer in words in which the voiceless stops were followed by a high and tense vowel rather than a low or a lax vowel.

The main focus of the task was originally on the nonwords in order to avoid the added difficulty of checking for familiarity, lexical frequency and phonological neighborhood density as factors seen to influence the production of VOT (Nielsen, 2011). These seven nonwords were randomly distributed along the map in order to label seven of the several landmarks present in the map. The selected map, however, already contained two real words that began with a voiceless stop and for this reason five more real words semantically related to the map task were selected. Because the real words weren't thought of being included in the main analysis, some of the conditions that the nonwords were subjected to were not complied by the real words.

Non-words (Target words)	Real words
Kun	King
Kawn	Castle *
Coon	People *
Poon	Pines
Tun	Path
Toon	Palm trees *(just analyzing palm)
Tawn	Town

Table 2. Target-words (non-words) and control (real) words
*Exceptions to the monosyllabic condition.

3.2.3. Passage and script

As stated earlier, the task required the interaction between the participants and the interlocutors. Because the interaction was tape-mediated, the interaction of the informants had to be the same, to make sure that all the participants received the same input and the same amount of repetitions of the nonwords and the real words in order for the changes in VOT to be comparable. The number of repetitions is shown in Table 3. First of all a short passage was designed. This passage gave the participants necessary information in order to complete the task. This short text contained the fourteen items (seven non words and seven real words) and because it needed to be read by the informants and by the participants twice, it permitted the researcher to obtain the VOT measurements under the same conditions in order to investigate whether the treatment had any effect on the VOT productions.

The script was devised in such a way so as not to be ambiguous in any way and to elicit the same answer from all the participants. This requirement was necessary in order to obtain a successful interaction and to make all the participants follow the same path. After the interaction, and taking into account the possibility that the target words might not be produced during the interaction, seven questions were designed in order to elicit the target words (the nonwords) in isolation for further analysis. The elicitation of the words in isolation was relevant in order to observe the difference in VOT between the target words within running speech and the words in isolation. (Lisker and Abramson, 1964) This analysis could not be done as participants' answers differed from the ideal responses and not all the words could be elicited in isolation from all the participants. (see Appendix B for passage and script)

Repetitions							
Non words	Total	Passage	Interaction	**Real words**	Total	Passage	Interaction
Kun	3	1	2	**King**	2	1	1
Kawn	5	2	3	**Castle**	7	2	5
Coon	3	1	2	**People**	4	3	1
Poon	3	1	2	**Pines**	3	1	2
Tun	3	1	2	**Path**	3	1	2
Toon	5	1	4	**Palm trees**	2	1	1
Tawn	3	1	2	**Town**	5	1	4

Table 3. Repetitions of the target words in the script of the informants.

3.2.4. Language Background questionnaire

The language background questionnaire was designed to obtain specific information that could be used in the discussion of the results. The questions elicited information on the age of onset in learning English, the amount of daily use of English, amount of daily exposure to English native speakers, self-perceived proficiency in English and self-perceived foreign accent of the participants and information on their self-confidence and anxiety regarding interaction with natives or non-natives and with males and females. Their degree of anxiety when recorded was also elicited. Some of the information is presented in Table 1. (see Appendix C.)

3.2.5. Post-task questionnaire

The post-test questionnaire was a useful tool to gather some more information on the participants' perceptions on the task that they had completed. The questionnaire was completed immediately after the participants had finished the task. The main point which is investigated is whether the participant perceived the interlocutor as an English native speaker or as a nonnative and to rate the interlocutors' degree of foreign accent according to their perception on a 7-point scale. (see Appendix D)

3.3. Recorded data from informants

The informants were required to read the script specifically prepared for them (Appendix B) and it was recorded in order to play it to the participants. They received the instructions from the researcher (Appendix E) and had some time to read the passage and the script so they could rehearse. They were asked to sound as natural as possible so that the participants could get the sense that, even though the interlocutor was not present, they were talking to a real person as in a face-to-face interaction. The speech of the two native speakers was recorded in the recording booth at the UB Phonetics lab, whereas the two non-native speakers were recorded in the booth at the URV as was most convenient for them. The same recording equipment was used in all the recordings.

During the recording session with the informants, the researcher monitored the subjects and only intervened when they increased their speech rate. Speech rate, thus, needed to be controlled for as previous studies reported that differences in speaking rate could produce variability in the VOT production of target words within running speech; in other words, that

an increase in the speaking tempo shortens VOT. (Theodore et al., 2009; Flege and Schimdt 1998) The same speech rate measure used in Mora (2008) was used: the time the participants took to read the passage was measured and then the number of syllables in the passage was calculated. When the speech rates were compared across informants, some differences were detected. The speech rate was 206.45 for the native female, 220.01 for the native male, 216.26 for the non native female and 247.22 for the non native male.

The non-native speakers of English produced VOT values within the range of those of the native speakers. Because the factor that was crucial in the distinction between the two groups of informants was VOT length, the speech of the non-natives was modified in Praat in order to reduce the VOT values so that those values closely resembled Spanish speakers VOTs. The target words and all other words that contained aspirations were modified by looking at the sound waveforms and spectrograms and by deleting the portion from the vertical line after the release burst until the first visible striation indicating voicing. The reduction of VOT was partially incomplete as the plosion of the voiceless stop was not deleted, thus leaving a cue of the intended VOT. The participants' VOTs for the each of the nonwords and the words are presented in Table 4.

Non-native advanced learners with a low degree of foreign accent were selected so that the only cue to distinguish them from the native speakers was the short VOT values. The presence of lack of phonetic convergence would only be conditioned by the short VOTs in the speech rather than by the perception of interlocutors' general foreign accent.

VOT (ms)	nonwords							words						
	Kun	Kawn*	Coon	Poon	Tun	Toon	Tawn	King	Castle*	People*	Pines	Path	Palm trees	Town
Native female (F)	55.54	46.55	52.51	48.05	50.30	48.03	52.35	20.97	45.71	26.25	42.61	38.37	33.06	44.30
Native male (M)	72.73	77.37	61.79	71.73	62.94	64.49	88.14	17.59	44.50	26.28	70.52	62.73	41.55	62.27
Non-native female (E)	19.04	22.38	24.92	17.03	31.74	16.23	10.90	19.40	17.72	12.25	31.90	5.23	12.34	16.25
Non-native male (C)	14.77	16.49	17.52	15.19	16.36	26.07	21.60	4.54	14.33	3.66	13.12	7.38	23.06	26.04

Table 4. VTable 4. VOT measurements for informants' productions of target items.
* Mean of repetitions

3.4. Procedure

The task was administered in the phonetics laboratory in the UB and required between 20 and 30 minutes to complete, including the interacting speaking task, the language background questionnaire and the post-task interview. The participants were randomly assigned to one of the groups: treatment or control and to one of the four conditions, and were recorded one at a

time in a recording booth using a Marantz PMD-660 digital recorder and a Shure X58 unidirectional microphone. The participants were required to speak their responses and to read the passage to the microphone in response to the input they heard from the interlocutors.

The procedure was similar for the two groups of participants: the experimental group and the control group, with some slight variations required by the kind of treatment they were subjected to. All the participants were given oral instructions of the task they had to perform and all the steps they needed to follow by the researcher. The participants were given the same instructions in a written form accompanied by the map. (Appendix F) They were given five to ten minutes to read the instructions carefully and to read the passage to themselves in order to take any notes or write down on the map any new information that could be useful for them for the completion of the task: find a path from the X to the Toon.

The participants in the treatment group were asked to go inside the recording booth, once they were ready, and read the passage. After that, they listened to the recorded speech of one of the informants and proceeded to interact with him/her. Once they found the path, they answered the questions proposed by the interlocutor and they were asked to read the same passage one last time before leaving the booth. Once outside the booth, they were given the language background questionnaire and the post-task questionnaire by the researcher. They were given as much time as they needed to complete both questionnaires. The researcher didn't intervene at any time during the task and as explained before, just stopped the recording when necessary so that the participants could interact and answer the questions. The researcher answered any questions the participants asked as long as they didn't involve revealing crucial details that could affect the results.

The participants in the control group were given the instructions by the researcher in oral and written form (Appendix G) and were also given five to ten minutes to read the instructions and the passage carefully and to take any notes on the map. Because their condition involved no interaction, these participants were asked to read the passage in the recording booth and immediately after, go out of the booth so that they could write the path they would follow. They were given ten minutes to write the path (approximately the same amount of time the experimental group needed to fulfill the interaction task). They were given the same questions the other participants answered but in a written form so that they could write their answers. After that, they were asked to go inside the recording booth to read their answers and the passage a second time. The last step was to complete the language

background questionnaire. Because the post-task questionnaire included questions regarding the interaction, the control group was not required to answer those questions.

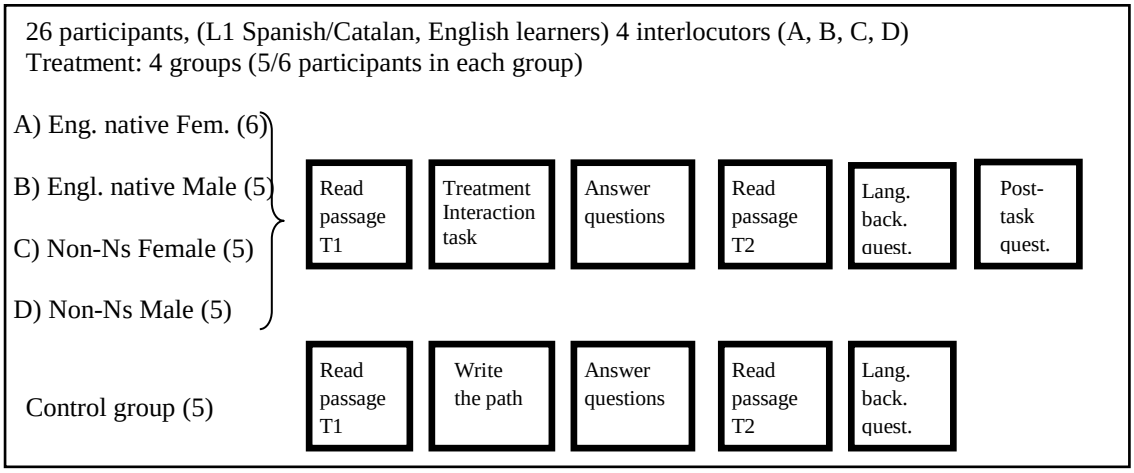

Figure 1. Task design and procedure for participants

4. MEASUREMENTS, CODING AND ANALYSES

4.1. VOT measurements

VOT of the initial p, t, k was measured in the fourteen target words (non-words and words) in the passage for participants at Time 1 and Time 2 and for informants. VOT was also measured in the target words that were produced during the interactions; however these data were not used for the analyses because some target words were not present in all the participants' productions; thus data were not comparable across all cases.

The VOT measurements were obtained by visually inspecting the spectrograms and waveforms in Praat by the researcher. Following the convention used in previous research, VOT was defined as the period between the onset of the release burst of the initial voiceless stop until the first striation that represents the start of the voicing of the vowel. (Chao and Chen, 2008; Flege, 1998; Port and Rotunno, 1979; Pardo, 2006; Lisker and Abramson, 1964)

This procedure yielded 784 VOT measurements. (26 participants x 14 target words x 2 times = 728 and 4 informants x 14 target words= 56) Some of the target words were repeated in the passage, so the mean for each word was calculated and used as the VOT value. Since the three voiceless stops (p, t, k) are known to have different mean VOTs, (Lisker and Abramson, 1964; Port and Rotunno, 1979), it was decided to calculate different means for the target words as shown in Table 5. (means for p, t, k separately for non words, words and all the target words together (items) and for non words, words and items without distinction of stops).

Mean VOTs (ms)				TIME 1												TIME 2											
				nonwords				words				items				nonwords				words				items			
Group	Nativ.	gender	Part. name	p	t	k	Total	P	t	k	Total	p	t	k	Total	p	t	k	Total	p	t	k	Total	p	t	k	Total
Experimental	Native	Diff.	J	37.27	54.12	47.70	48.96	22.73	52.64	25.58	27.82	25.64	53.77	38.85	38.39	39.17	48.50	43.31	44.94	11.53	47.47	30.74	24.44	20.26	48.24	36.28	34.69
		Same	S	44.49	57.20	43.62	49.56	23.62	40.52	31.26	28.22	27.80	53.03	38.67	38.89	51.92	68.54	36.79	52.56	17.07	48.94	30.34	25.41	24.04	63.64	34.21	38.99
		Diff.	R	56.16	47.95	48.43	49.33	15.66	33.39	32.24	22.93	23.76	44.31	41.95	36.13	34.68	47.97	47.33	45.80	19.55	65.81	29.42	28.98	22.57	52.43	40.16	37.39
		Same	G	33.03	40.39	30.98	35.30	22.91	41.31	27.13	26.74	24.93	40.62	29.44	31.02	39.68	40.16	36.41	38.48	16.28	53.16	23.40	23.58	20.96	43.41	31.20	31.03
		Same	A	73.12	64.08	54.71	61.36	26.47	45.35	42.61	33.78	35.80	59.40	49.87	47.57	60.83	64.14	70.51	66.40	14.21	49.28	22.92	21.71	23.53	60.43	51.47	44.05
		Same	L	80.92	56.05	76.58	68.40	54.53	44.87	48.25	51.36	59.81	53.26	65.25	59.88	32.62	75.42	83.90	72.94	42.28	33.19	54.36	44.43	40.35	64.86	72.08	58.69
		Diff.	M	16.86	38.36	26.77	30.32	22.04	52.12	24.64	27.08	21.00	41.80	25.92	28.70	28.56	46.68	43.78	42.85	15.15	50.20	21.21	21.89	17.83	47.56	34.75	32.37
		Diff.	G	46.78	58.41	50.07	53.18	10.76	48.63	40.59	24.69	17.96	55.97	46.28	38.93	66.23	64.02	53.20	59.70	16.40	48.01	38.78	27.31	26.37	60.02	47.43	43.50
		Diff.	C	79.47	64.24	32.40	52.77	7.99	64.96	25.37	21.09	22.29	64.42	29.58	36.93	84.12	72.05	49.11	63.94	12.35	60.8	31.77	24.82	26.70	69.24	42.17	44.38
		Diff.	M	45.56	38.80	46.12	42.90	14.87	36.54	40.73	25.36	21.01	38.24	43.97	34.13	17.15	50.33	46.37	43.89	10.71	12.31	45.63	20.92	12.00	40.82	46.07	32.40
		Diff.	M	40.83	54.72	33.85	43.79	23.06	35.99	27.60	26.20	26.61	50.04	31.35	35.00	32.18	57.02	48.90	49.99	17.35	67.43	30.24	28.19	20.32	59.63	41.43	39.09
	Non-native	Same	C	29.09	66.45	46.41	52.52	12.81	51.55	19.68	20.31	16.07	62.73	35.72	36.42	21.64	50.34	42.65	42.94	12.30	29.63	21.19	17.31	14.17	45.16	34.06	30.13
		Same	O	28.55	60.54	38.10	46.35	12.99	51.46	31.16	23.68	16.11	58.27	35.32	35.02	22.11	56.97	23.41	37.61	11.44	25.06	30.12	18.73	13.58	49.00	26.09	28.17
		Same	M	45.52	76.27	53.69	62.20	26.17	47.07	36.13	32.00	30.04	68.97	46.67	47.10	35.43	72.07	53.69	58.96	22.58	50.57	30.94	28.97	25.15	66.69	44.59	43.96
		Same	E	45.05	72.17	76.08	69.97	45.32	77.36	78.18	60.18	45.27	73.47	81.32	65.08	45.77	91.51	85.46	82.38	45.99	81.19	61.27	55.38	45.95	88.93	75.78	68.88
		Same	S	28.81	83.81	34.19	54.69	12.49	35.43	22.08	18.50	15.75	71.72	29.34	36.59	24.95	71.60	37.85	50.47	12.72	73.04	37.36	28.38	15.17	71.96	37.65	39.42
		Same	A	36.88	74.30	78.93	70.94	30.91	52.11	52.04	39.97	32.10	68.75	68.17	55.46	80.38	74.94	79.04	77.48	33.62	59.05	56.18	43.69	42.97	70.97	69.90	60.59
		Diff.	C	8.34	9.84	33.09	19.59	13.26	9.56	28.52	17.09	12.28	9.77	31.26	18.34	16.42	13.76	35.29	23.37	11.17	8.67	27.62	15.51	12.22	12.49	32.22	19.44
		Diff.	E	34.41	49.02	29.58	38.60	15.50	45.67	36.57	25.83	19.28	48.18	32.37	32.21	22.36	59.52	28.61	40.97	16.30	57.80	20.41	23.40	17.51	59.09	25.33	32.19
		Diff.	S	20.90	53.71	40.30	43.28	29.74	32.53	44.29	34.29	27.97	48.42	41.90	38.79	69.14	77.68	72.42	74.20	27.42	57.32	43.22	36.21	35.77	72.59	60.74	55.20
		Diff.	A	68.48	52.73	62.73	59.27	40.54	59.41	44.59	44.40	46.13	54.40	55.48	51.83	60.81	64.69	49.15	57.48	28.92	92.55	43.14	42.07	35.30	71.66	46.75	49.77
Control			M	24.05	50.30	52.33	47.42	14.47	38.55	28.22	21.84	16.39	47.36	42.69	34.63	38.62	51.30	60.87	53.59	26.87	64.21	30.30	33.18	29.22	54.53	48.65	43.39
			A	22.03	42.33	37.37	37.30	11.27	26.98	34.78	20.23	13.42	38.50	36.33	28.77	19.72	52.90	61.64	51.91	13.56	49.32	24.31	21.74	14.79	52.01	46.71	36.82
			G	73.06	55.92	60.90	60.50	26.86	24.15	36.93	29.35	36.10	47.98	51.31	44.92	49.51	41.82	67.84	54.07	28.25	41.56	45.12	34.97	32.50	41.76	58.75	44.52
			S	79.60	73.97	76.53	75.87	8.62	52.28	39.00	23.53	22.81	68.55	61.52	49.70	68.32	80.47	100.18	87.18	13.56	66.22	33.65	26.82	24.51	76.91	73.57	57.00
			M	61.66	77.60	99.77	84.82	51.05	61.34	60.61	55.25	53.18	73.54	84.10	70.04	122.88	81.54	100.02	95.36	57.38	65.16	77.73	64.31	70.48	77.54	91.10	79.83

Table 5. Mean VOT values (ms) of p, t, k nonwords, words and items at T1 and T2 for the 26 participants.

4.2.Coding

Data for participants were coded according to the four conditions under which the participants performed the interactive task: native same-gender interlocutor, native different-gender interlocutor, non-native same-gender interlocutor and non-native different-gender interlocutor. For nativeness, participants were coded into two categories: if their interlocutor was a native English speaker they were given a 1 and if the interlocutor was a non-native English speaker, they were given a 2. For the second variable, categories were also established: 1 when both the interlocutor and the participant in the pair had the same gender and 2 when they had different gender. Other categorical variables were created including the informants: for gender (1= female and 2= male), for group condition (1= experimental, 2= control and 3= informant) and for the L1 (1= non native English speaker and 2= English speaker). A last categorical variable for participants was created for VOT gains: 1 indicated VOT gains, and 2 indicated VOT losses.

The dependent variables in this study consisted in the VOT measurements for each of the non-words and words at Time 1 (T1) and at Time 2 (T2). Apart from the nonwords and the words, the VOT measurements were coded into other dependent variables: p, t, k nonwords, words and items (nonwords and words) separately, and for all the nonwords, words and items. A new variable, VOT gains (VOT measure T2 – VOT measure T1) was coded for each of the dependent variables. Speech rate measurements were coded into a continuous variable for speech rate at T1, at T2 and the difference between T1 and T2 separately.

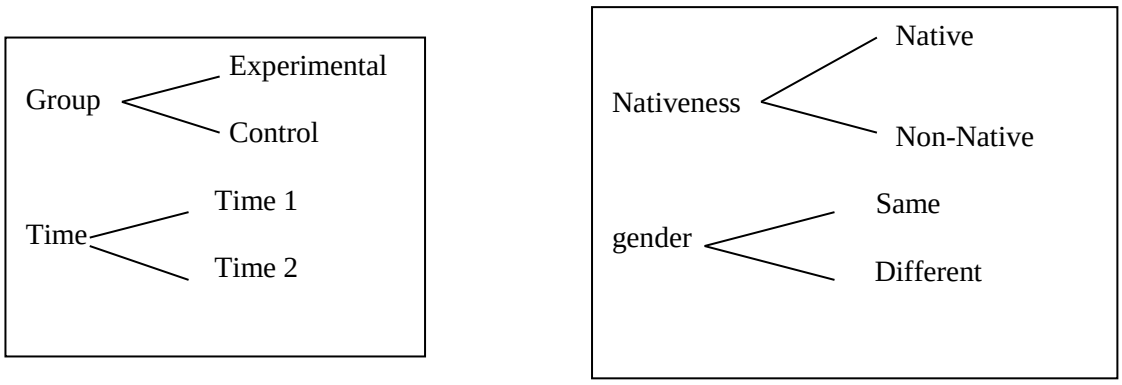

Figure 2. Variables according to which data was coded.

4.3.Analyses

Three sets of analyses were conducted: preliminary analyses to explore the data, the main analyses addressing the research questions and individual data analyses to help explain the results obtained. All the analyses were carried out using SPSS for Windows. The first step consisted in using the Kolmogorov-Smirnov test of normality for all the VOT measurements. Data was not normally distributed and it was decided that non-parametric tests would be used. In the preliminary analyses, differences between the informants were checked by observing the descriptives. A Wilcoxon test was used to test the difference between the VOTs of two dependent variables (words and non words) at Time 1 and Time 2. Wilcoxon tests were carried out independently for all the participants according to group condition (experimental and control) in order to examine speech rate. *Pearson-r* correlations were carried out to investigate the relationships between the target words at time 1 and time 2 and between speech rate and the target words also at time 1 and time 2.

The main analyses were carried out with the experimental group in order to check for treatment effects. A Wilcoxon test was used to check for significant differences between dependent variables at time 1 and time 2 for the experimental group as a whole. Then, two Mann-Whitney tests were carried out using the VOT gains as the dependent variable in order to see the effects of the two independent variables, *nativeness* and *gender* of the pair independently. The last analysis that was carried out was a Chi-square using two categorical variables*: VOT gains* and *nativeness* in order to see the distribution of participants regarding their VOT gains or VOT losses according to the condition they were subjected to: interaction with a native or with a non-native. A second Chi-square was carried out for *VOT gains* and for *gender*, same-gender and different-gender dyads.

5. RESULTS

The results of the Kolmogorov-Smirnov test of normality revealed that the VOT values of the participants for the dependent variables were not normally distributed in all the cases; for that reason, non-parametric tests were used for subsequent data analyses.

Table 6 presents the information present in the descriptive for informants: if the informants are compared across the two independent variables, a large difference can be seen in their mean VOT values in nonwords, words and items. As expected, non-natives produced shorter VOTs than natives even though the release burst of their productions was not deleted.

VOT means (ms)					
Nativeness	Gender	N	nonwords	words	items
Native	Female	1	50.48	39.90	45.19
	Male	1	71.31	50.87	61.09
	All	2	60.90	45.39	53.14
Non-native	female	1	20.32	15.44	17.88
	male	1	18.29	14.52	16.40
	all	2	19.31	14.98	17.14

Table 6. Information in the descriptive for informants.

The Wilcoxon test indicated that the difference between the mean VOTs of all the participants between nonwords and words was statistically significant ($p < .001$) both at T1 (nonwords: $M = 52.27$; words $M = 30.06$) and T2 (nonwords: $M = 56.51$; words: $M = 30.08$).

The results in the descriptives for non-words and words at T1 and T2 when the participants were split by group condition: *experimental* and *control* and the participants in the experimental group by *nativeness*: native pair and non native pair are presented in Table 7. These results show that the difference between non words and words was maintained from time 1 to time 2 for the two groups and the two conditions and that the results within the dependent variables did not change much. From this observation, it can be argued that the treatment had no effect on the mean VOTs of the experimental group. A slight effect of the treatment on non words can be appreciated for the experimental group regarding the two independent variables: when interaction occurred with natives and non natives and when interaction occurred in different gender dyads.

Mean VOTs (ms)		N	T1		T2	
			nonwords	words	nonwords	words
Group condition	Experimental	21	50.15	30.07	53.68	28.63
	control	5	61.18	30.04	68.42	36.20
Nativeness	Native	11	48.71	28.66	52.86	26.51
	Non-native	10	51.74	31.62	54.58	30.96
Gender	Same	10	57.12	33.47	58.02	30.75
	different	11	43.81	26.98	49.73	26.70

Table 7. Mean target items according to group condition and independent variables.

The Mann-Whitney tests showed that the difference between the mean speech rate at T1 (*M*= 221.3773) and at T2 (*M*=231.2982) of the participants in the experimental group was significant ($p<.003$). However the difference in the control group (*M*= 204.6399 at T1 and *M*= 205.5552 at T2) was not significant ($p=.500$). The results of the Pearson-r correlation for speech rate indicated that speech rate was not having an effect on VOT measures as very small correlations were found between speech rate and non words VOT at T1 and at T2 (weak negative correlation at T2, *r*= -.117) and between speech rate and words VOT at T1 and T2 (small correlation at T2, *r*= -.172).

A significant correlation was found between the mean VOTs of the non-words and words at T1 and T2 respectively (non words, *r*= .81 and words, *r*= .89). The correlations across non words and words at T1 and T2 were also significant (nonwords and words T1, *r*= .665; nonwords and words T2, *r*= .81). It can be argued that the treatment had no effect whatsoever on the mean VOT values as the VOTs are similar across T1 and T2.

For the main analyses, the descriptives showed that there were no significant changes between the mean VOT values of the dependent variables across T1 and T2 for the treatment group indicating no effect of the treatment. The Wilcoxon test revealed that for the treatment group the differences were significant for *t_items* ($p<.017$) and for *p_words* ($p<.025$) and approached significance for the *nonwords* ($p<.092$). For the mean VOT gains according to the condition of *nativeness*, the Mann-Whitney test indicated significance for only one of the variables, *p_items* ($p<.091$). When the VOT gains were examined by the second condition, *gender*, no significance was found for any of the dependent variables. This indicates that the independent variables, *nativeness* and *gender*, had no significant effects on the dependent variables.

Participants were coded according to a new variable, VOT gains. Participants were divided into two groups: those that showed VOT gains and those that showed VOT losses. The changes in the mean VOTs of the nonwords from T1 to T2 were the most noticeable of all the dependent variables, even though those changes were not significant. The results of the Chi square test for independence are summarized in Tables 8 and 9. Nine out of the eleven participants who performed the task under the native condition obtained VOT gains, whereas only two had shorter VOTs. Half of the participants under the non-native condition showed VOT gains and the other half, VOT losses. 8 out of the 11 participants in different-gender dyads showed VOT gains, whereas only three showed VOT losses. In the same-gender dyads,

only 6 out of the 10 participants showed VOT gains. These results were not significant for nativeness or gender. (p=.280 and p=.877 respectively)

Further individual analyses could be carried out for the participants who showed VOT gains to investigate whether the imitation occurred in all the nonwords or not and to explore the individual characteristics of the participants that made them change their VOTs towards that of the natives and in different-gender dyads.

			VOT GAIN		VOT LOSS	
		Total N	N	% within nativeness	N	% within nativeness
Nativeness	Native	11	9	81.8%	2	18.2%
	Non native	10	5	50%	5	50%

Table 8. Distribution of participants according to their VOT gains or losses according to nativeness.

			VOT GAIN		VOT LOSS	
		Total N	N	% within gender	N	% within gender
Gender	Same	10	6	60%	4	40%
	different	11	8	72.7%	3	27.3%

Table 9. Distribution of participants according to their VOT gains or losses according to gender.

6. DISCUSSION

In line with previous research, a great variability in VOT length in all the participants' productions was found in T1 and in T2 due to the fact that VOT varies not only from talker to talker but also from word to word. (Theodore et al. 2009; Allen, 2003; Pardo, 2006; Flege, 1998) All the participants had received formal instruction in English for more than 10 years and all of them show VOT in different degrees indicating that they are in the process of creating a new category for English voiceless stops separately from the one for Spanish stops; however, the variability reported in the present study shows that the establishment has not been completed. (Flege, 1998)

According to Flege (1998) the variability of accuracy in the production of initial voiceless stops and corresponding VOTs by non-native English speakers was not found to depend on lexical factors like lexical frequency. Other factors might play a role such as

individual differences in pronunciation, learning experience and perceptual awareness. Previous studies claimed that speech rate had a significant effect on VOT values (Theodore, 2009; Flege and Schmidt, 1996; Mora, 2005). Results showed small negative correlations between speech rate and VOT gains that could have obscured VOT gains at T2; however, correlations were not significant.

Regarding the first research question and contrary to what was hypothesized, it was found that the tape-mediated interaction map task had no significant effects on the mean VOT values of participants from T1 to T2 when analyzed as a whole group. The Wilcoxon test showed that the treatment affected the dependent variables in different ways and that VOT changes only reached significance for *t* items, *p* words and nonwords.

As for the second question, it was hypothesized that all the participants' VOT values would increase as a consequence of their exposure to long VOTs produced by native English speakers during the interaction. No phonetic convergence was expected in the group that interacted with non-native interlocutors as imitation of reduced VOTs could lead to phonological ambiguity between voiceless and voiced stops. (Nielsen, 2011) Contrary to the hypothesis and to previous findings (Nielsen, 2011, Pardo, 2006), nativeness did not have an effect on all the variables, as the Mann-Whitney test indicated significance for only one of the variables, *p* items. A tendency of participants to show VOT gains after they interacted with native interlocutors was found (81.8%) in the individual analyses for the nonwords, indicating phonetic convergence to native speakers. However, half of the participants in the non-native condition also showed VOT gains, contrary to previous studies (Flege, 1998; Nielsen, 2011). This could be attributed to either a task effect, as participants read the same passage twice, or to non-native interlocutors producing longer VOTs than the participants interacting with them. The adaptation of participants to both native and non-native interlocutors is in line with Kim's (2011) findings.

Regarding the third research question, previous studies found that gender of the dyads influenced the degree of convergence (Pardo, 2006; Namy et al., 2002; Lumley and O'Sullivan, 2005). The results in the present study showed no significant effects of gender on any of the dependent variables but a greater convergence in nonwords was found for different than for same gender dyads, replicating Namy's (2002) findings.

In the present study, nativeness is seen to affect phonetic convergence to a greater extent than gender, even though effects did not reach significance. This difference can be attributed to the interlocutor not being present during the interaction. Gender might have a greater effect

in face-to-face interactions as it modifies the attitudes of the participants towards the speakers (Pardo, 2006; Namy et al., 2002).

Some participants showed VOT losses at T2 that could be due to the variability of VOT and to the interference of L1 Spanish typical VOT values for voiceless stops, which indicates that the students are in the process of creating separate categories for voiceless English stops.

The task affected individuals differently rather than at group level according to nativeness and gender, as convergence was observed in some of the VOT measurements for some participants in all the conditions. The inconclusive results of the present study are further evidence of the mixed results found in the literature suggesting that some general tendencies can be found in a greater phonetic convergence towards native speakers than non-natives and in different-gender dyads than same-gender dyads; however individual differences play a role in performance and in adaptation as the great variability of VOT values between T1 and T2 indicates.

7. CONCLUSION

VOT was measured in 7 non-words and in 7 real English words from a passage read before (T1) and after (T2) a tape-mediated interaction map task. Based on previous research on VOT (Flege, 1991, Flege, 1998) the non native English speakers who participated in the task were expected to produce English voiceless stops /p, t, k/ with a wide range of VOT values, short values corresponding to Spanish and to long values to English. The primary aim of this study was to detect any T1-T2 changes in VOT as a consequence of the interlocutors' characteristics in terms of nativeness.

A second aim was to investigate whether the fact that the interlocutor and the participant formed a same or a different gender dyad had any effects on the performance and thus, on the convergence of the participants in the tape-mediated interaction. Wilcoxon tests showed that the treatment was also effective for some of the dependent variables (*t*-items, *p*-words and nonwords). The Mann-Whitney test only showed effects for *p*-items when *nativeness* was examined separately. The effects of gender did not reach significance for any of the dependent variables. The individual analyses on nonwords indicated that more than 80% of the participants who interacted with a native English speaker produced longer VOTs at T2, thus showing phonetic convergence. The same amount of participants under the non-native condition produced longer and shorter VOTs, respectively. These results indicate, firstly, that the treatment affected all the participants (experimental and control) even though the changes

in mean VOTs as a whole group did not reach significance and, secondly, that nativeness and gender affected the participants in different ways showing that VOT is a phonetic feature highly sensitive on social, contextual but also on individual factors.

8. LIMITATIONS AND FURTHER RESEARCH

Further individual analyses could uncover differences in how the task conditions and the individual characteristics of the interlocutors might be influencing phonetic convergence in a tape-mediated interaction task. The general tendency of participants was to adapt to native speakers but half of the participants in the non-native condition also showed VOT changes. The VOT values of the non-native informants were longer than typical Spanish VOTs as the release burst was not deleted during the modifications. Because non-native informants' speech was not strongly foreign accented, some aspiration was still present and in some cases it was longer than participants' productions, some adaptation was observed. A replication of this study in which non-native VOT values are near 0ms by deleting stop release bursts could produce different results in line with the hypotheses in the present study.

Gender was analyzed in terms of same-gender and different-gender dyads and results showed more convergence in different-gender dyads but individual analyses are needed in order to detect differences between female and male participants within the dyads so that results can be compared to previous studies that have examined male and female behaviors. (Pardo, 2006; Namy et al., 2002)

Interactions between nativeness and gender could not be examined as no pairs could be formed for two of the conditions; namely, native male-male and nonnative female-male due to the small number of male participants. Given the importance of these two factors reported in previous studies, pairs for all the conditions should be included in further research examining phonetic convergence through interaction.

The interaction task included some questions that were intended to elicit the production of target words in isolation in order to compare VOT productions in running speech and in isolation. Not all the target items were elicited; thus, the comparison was not possible. This indicates that the map task used in the present study should be improved to solve the flaws that were observed.

Nielsen (2011) found that participants who were exposed to a higher number of repetitions of the target words showed more convergence. The target items were produced by the

informants a mean of 3.6 times and given the lack of significance of phonetic convergence, a higher number of repetitions is needed in order for participants to adapt to a significant level.

Lumley and O'Sullivan (2005) found some effects of the tape-mediated interaction task and concluded their study claiming that even when the interlocutor is not present, the notion of a real interaction is not vanished. In the present study, only a few participants developed their answers as they would do if their interlocutor was present; the majority of the participants replied with short answers (e.g. *yes, right, sure*) even though they received instructions to develop their answers as if they were participating in a real interaction task. The majority of the participants reported a high level of anxiety as they were recorded and they were performing the task inside a recording booth.

Further research is needed in order to examine the effects of nativeness and gender on VOT convergence in an interaction map task so that conclusive results can be found and can be used as evidence of previous findings.

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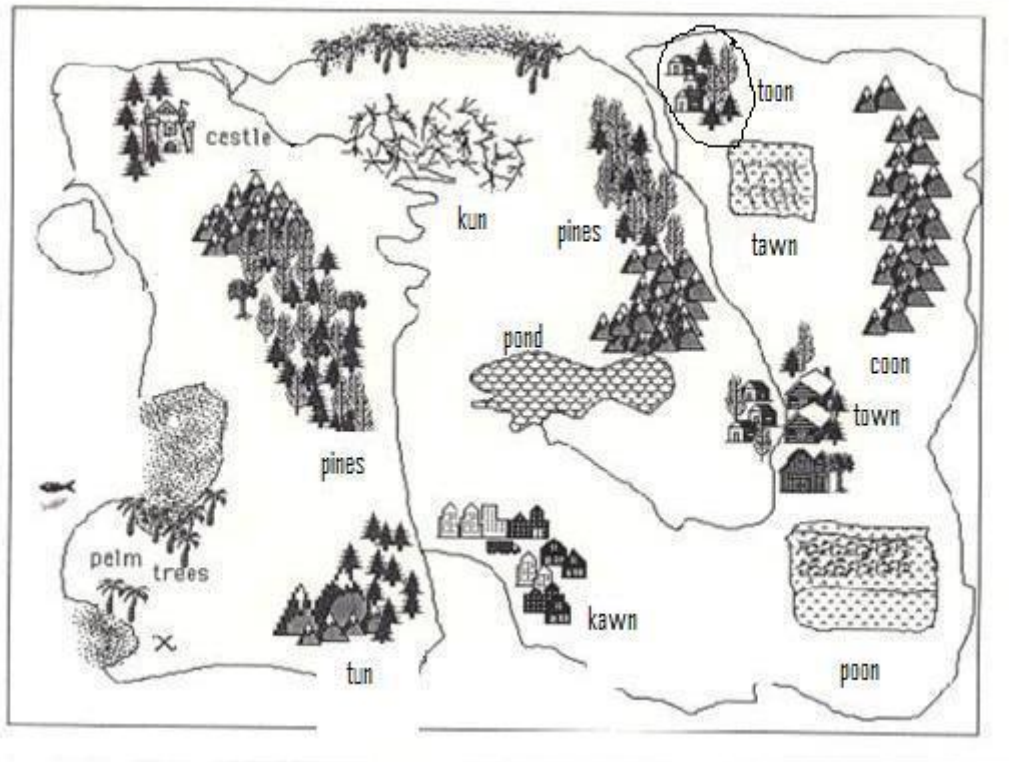
APPENDIX A: MAP



APPENDIX B: PASSAGE AND SCRIPT

*I: "*Hello! Let's begin. I am going to read the passage so that you can check if we have the same information. After that we will start with the activity."

"The people of this island have made several new constructions which are not indicated in this old map. The king who lives in the castle with his family ordered some of his serfs to build a bridge in order to cross the river and get from the castle to the kun. He decided that it was necessary because some inhabitants of Kawn discovered some crocodiles in the river between the pines and the tun. The people of the Town, who were so tired of the inhabitants of Kawn intruding in their lands, decided to build a wall between the river and the poon and in that way protect all the people living there. The boat has left you near the palm trees marked with an X and you need to find the path in order to get to the Toon; but one last piece of advice: beware of the wolves wandering around between the tawn and the coon; there will be no escape if they find you!"

I: "Alright, now that we know about the new constructions and some of the dangers along the way, why don't we get started? First of all just let me remind you that we need to find a path to go from the X to the Toon. Ok, so what should our first stop be? Should we go to the Kawn or to the castle?"

I: "Oh, you are right. We need to go to the castle first. I completely forgot about the crocodiles between the pines and the tun. I was thinking that we could go straight as the tun is near the starting point. So, now we are in the castle and I guess we need to go to Kawn. Can we just simply cross the river at any point in order to get there?"

I: "Hmmm, that's what I thought. I am afraid we cannot cross the river unless there is a bridge, so we need to cross the bridge from the castle to the kun, then go round the kun and finally go down until we reach Kawn. Now, what should our next stop be? I remember something about a wall and the poon, but I guess we need to stop at the town right?"

I: "So, we go around the poon and then to the town. Good! Let's keep going! I've got an idea: we could go to the coon, turn right and go around it until we reach the Toon. But that might take too long… What about we just go straight between the coon and the tawn?"

I: "It is true. There were wolves wandering near the tawn. But finally, we made it to the Toon!"

"Now let me ask you some other questions and please reply just by using one word (by the way, you can look at the map if you don't remember):"

- "When we were trying to avoid the wolves, what was the name of the place that we passed by before we got to the Toon?"
- "Remember the bridge the king built near the castle… Where did it take us to?"
- "What was the name of the place that we walked around to go to the Town?"
- "What was the end point called?"
- "The crocodiles were wandering between the pines and a place near the palm trees. What was the name of that place?"
- "Where did the people who intruded in the Town live?"
- "What were the mountains to the right of the wolves called?"

"Alright! I am just going to ask you one more thing before we finish this activity: I would like you to read the text aloud to the microphone one more time and then draw the path that we followed. You can start reading now."

"Thank you so much! It was nice doing this activity with you. Bye!"

APPENDIX C: LANGUAGE BACKGROUND QUESTIONNAIRE

Language background questionnaire

Please answer the following questions/statements:

1. What is your gender? Male Female
2. What is your age?
3. When did you start learning English and how old were you?

4. Have you ever done a stay abroad to an English-speaking country (academic or work)? If you did, indicate the country and the length of your stay.

5. Rate your daily exposure to English native speakers in this scale from 1 to 7 (being 1 hardly ever and 7 being most of the time) (including people, films, TV shows, music…)

_____

1 2 3 4 5 6 7

6. Rate your amount of daily use of English in and out of class in this scale from 1 to 7 (being 1 not much and 7 being a lot) Indicate the amount of hours a day.

_____

1 2 3 4 5 6 7

7. What kind of English are you most used to: British or American?
8. Rate your self-perceived proficiency in English in a scale from 1 to 7 (1 being beginner and 7 very proficient)

_____

1 2 3 4 5 6 7

9. Rate your self-perceived foreign accent in English in this scale from 1 to 7 (1 being no foreign accent and 7 strong foreign accent)

_____

1 2 3 4 5 6 7

10. How important is it for you to sound like a native speaker of English? (1 not important, 7 my goal when studying English)

1 2 3 4 5 6 7

11. How confident do you think you are when you speak in English? (1 not confident at all, 7 super confident)

1 2 3 4 5 6 7

12. Indicate your level of anxiety when you speak in English. (1 not anxious at all, 7 super anxious)

1 2 3 4 5 6 7

13. Do you think your level of anxiety when speaking in English changes/depends on whether your interlocutor is a native or a non-native of English? In the case you marked Yes, please indicate whether the anxiety increases or decreases.

Yes with a native	Yes with a non-native
No with a native	No with a non-native

14. Do you think that the gender of your interlocutor has an influence on you when you speak in English? Please next to the option you select specify whether it is your anxiety or your self-confidence that increases.

Yes if it is a woman	Yes if it is a man
No if it is a woman	No if it is a man

15. Do you think being recorded when you speak in English increases your anxiety? (1 not really, 7 a lot)

1 2 3 4 5 6 7

APPENDIX D: POST-TASK QUESTIONNAIRE (for treatment group)

POST-TASK QUESTIONNAIRE

1. What did you think of the task? Did you consider it to be difficult/complex or very easy?

2. Would you say that your interlocutor was a Native speaker of English or a Non native speaker of English? Why do you think so?

3. How would you rate the foreign accent of the non-native speaker in a scale of 1 to 7 (1 strong FA and 7 no FA at all)

4. Were you trying to imitate the speech of your interlocutor? Why or why not?

5. Indicate your level of anxiety during this task. (1 not anxious at all, 7 super anxious) Why?

APPENDIX E: INSTRUCTIONS FOR THE INFORMANTS

The goal of the activity is that the participant finds a path to get from X to the Toon. You will need to read the script below as naturally as possible as if you were participating in a real interaction. Please, you just need to read the parts of the speech which appear between inverted commas. You are not required to stop as if to give time for the participant to answer, though your intonation needs to emulate that situation. You might want to read the words in the map once before you start reading the script, in order to make sure that you are pronouncing them the right way.

Interaction

I: "Hello! Let's begin. I am going to read the passage so that you can check if we have the same information. After that we will start with the activity."

"The people of this island have made several new constructions which are not indicated in this old map. The king who lives in the castle with his family ordered some of his serfs to build a bridge in order to cross the river and get from the castle to the kun. He decided that it was necessary because some inhabitants of Kawn discovered some crocodiles in the river between the pines and the tun. The people of the Town, who were so tired of the inhabitants of Kawn intruding in their lands, decided to build a wall between the river and the poon and in that way protect all the people living there. The boat has left you near the palm trees marked with an X and you need to find the path in order to get to the Toon; but one last piece of advice: beware of the wolves wandering around between the tawn and the coon; there will be no escape if they find you!"

I: "Alright, now that we know about the new constructions and some of the dangers along the way, why don't we get started? First of all just let me remind you that we need to find a path to go from the X to the Toon. Ok, so what should our first stop be? Should we go to the Kawn or to the castle?"

Participant

I: "Oh, you are right. We need to go to the castle first. I completely forgot about the crocodiles between the pines and the tun. I was thinking that we could go straight as the tun is near the starting point. So, now we are in the castle and I guess we need to go to Kawn. Can we just simply cross the river at any point in order to get there?"

Participant

I: "Hmmm, that's what I thought. I am afraid we cannot cross the river unless there is a bridge, so we need to cross the bridge from the castle to the kun, then go round the kun and finally go down until we reach Kawn. Now, what should our next stop be? I remember something about a wall and the poon, but I guess we need to stop at the town right?"

(Participant)

I: "So, we go around the poon and then to the town. Good! Let's keep going! I've got an idea: we could go to the coon, turn right and go around it until we reach the Toon. But that might take too long… What about we just go straight between the coon and the tawn?"

(Participant)

I: "It is true. There were wolves wandering near the tawn. But finally, we made it to the Toon!"

"Now let me ask you some other questions and please reply just by using one word (by the way, you can look at the map if you don't remember):"

- "When we were trying to avoid the wolves, what was the name of the place that we passed by before we got to the Toon?"
- "Remember the bridge the king built near the castle… Where did it take us to?"
- "What was the name of the place that we walked around to go to the Town?"
- "What was the end point called?"
- "The crocodiles were wandering between the pines and a place near the palm trees. What was the name of that place?"
- "Where did the people who intruded in the Town live?"
- "What were the mountains to the right of the wolves called?"

"Alright! I am just going to ask you one more thing before we finish this activity: I would like you to read the text aloud to the microphone one more time and then draw the path that we followed. You can start reading now."

"Thank you so much! It was nice doing this activity with you. Bye!"

APPENDIX F: INSTRUCTIONS FOR PARTICIPANTS (treatment groups)

The goal of the activity is to answer the questions of the interlocutor from the recording you will listen in order to find a path to get from the X to the Toon, both points marked in the map. You need to answer the questions/suggestions indicating your decisions step by step and justifying your choices at all times.

The map you will be given shows the important places on this island. However, the island has some important things to consider which are not indicated in the map. That information is described in the following text and you need it in order to complete the task (to find a valid path to the Toon).

You have 5 minutes to read the text to yourself and to take notes below the map or to mark things into the map. When you finish (after the 5 minutes) you will be asked to go into the recording booth and read the text aloud to the microphone. After that you will need to listen to your interlocutor and answer his or her questions offering as many details as possible. Once you reach the Toon you will be asked to answer some other questions: this time you will only have to reply by using one word. At the end of the conversation you will be asked to read the same text aloud one more time. The interlocutor will give you all the instructions and will guide you step by step.

Note: *there are some names of places in the text that you will not understand but, don't worry about them as you don't need to know the meaning of those words; those places are clearly indicated in the map.*

"The people of this island have made several new constructions which are not indicated in this old map. The king who lives in the castle with his family ordered some of his serfs to build a bridge in order to cross the river and get from the castle to the kun. He decided that it was necessary because some inhabitants of Kawn discovered some crocodiles in the river between the pines and the tun. The people of the Town, who were so tired of the inhabitants of Kawn intruding in their lands, decided to build a wall between the river and the poon and in that way protect all the people living there. The boat has left you near the palm trees marked with an X and you need to find the path in order to get to the Toon; but one last piece of advice: beware of the wolves wandering around between the tawn and the coon; there will be no escape if they find you!"

APPENDIX G: INSTRUCTIONS FOR PARTICIPANTS (control group)

The goal of the activity is to read the text and mark the new constructions /dangers on the map so that you can find a path to get from the X to the Toon, both points marked in the map. You need to write about the path that you need to follow indicating your decisions step by step and justifying your choices at all times.

The map you will be given shows the important places on this island. However, the island has some important things to consider which are not indicated in the map. That information is described in the following text and you need it in order to complete the task (to find a valid path to the Toon).

You have 5 minutes to read the text to yourself and to take notes below the map or to mark things into the map. When you finish (after the 5 minutes) you will be asked to go into the recording booth and read the text aloud to the microphone. After that you will need to write about the path that you will follow including as many details as possible and justifying your decisions. Once you finish writing, you will be asked to go into the booth and read the text one more time and answer some questions that are on a paper sheet you will be given: you will have to reply only by using one word.

Note: *there are some names of places in the text that you will not understand but, don't worry about them as you don't need to know the meaning of those words; those places are clearly indicated in the map.*

"The people of this island have made several new constructions which are not indicated in this old map. The king who lives in the castle with his family ordered some of his serfs to build a bridge in order to cross the river and get from the castle to the kun. He decided that it was necessary because some inhabitants of Kawn discovered some crocodiles in the river between the pines and the tun. The people of the Town, who were so tired of the inhabitants of Kawn intruding in their lands, decided to build a wall between the river and the poon and in that way protect all the people living there. The boat has left you near the palm trees marked with an X and you need to find the path in order to get to the Toon; but one last piece of advice: beware of the wolves wandering around between the tawn and the coon; there will be no escape if they find you!"

Questions on the map

- When you were trying to avoid the wolves, what was the name of the place that you passed by before you got to the Toon?
- Remember the bridge the king built near the castle… Where did it take you to?
- What was the name of the place that you walked around to go to the Town?
- What was the end point called?
- The crocodiles were wandering between the pines and a place near the palm trees. What was the name of that place?
- Where did the people who intruded in the Town live?
- What were the mountains to the right of the wolves called?