

Intonation as a perceptual cue in regulating the turn taking systems of English and Tunisian Arabic conversations

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Abstract: *This article presents 2 studies that investigate the role of intonation as a perceptual cue that regulates turn taking in English and Tunisian Arabic (TA) conversations. Study 1 is based on exposing native speakers of English and Tunisian EFL learners of English to English isolated, filtered, and contextualised speech. They were asked to judge the turn type, a probable speaker change, and the cue used for their judgements. Study 2 is based on exposing the same TA respondents to TA data, following the same three tests. Results show that the two languages share the following features. Turn leave was indicated by a drop in energy, in inhaled, and a fall in pitch (L%) at the end of the intonation phrase unit. Turn hold was indicated by a high final pitch contour (H%), an audible intake of breath, inter-pauses, filled pauses and a boundary mid level tone. Turn Take was identified by a rise of pitch (H*) in comparison with prior speech, after a low final pitch contour (L%), after a level or high final pitch contour (by interruption/overlap), after pauses and decrease in intensity. Besides, explicit instruction on intonation did not give valuable results as was expected.*

Keywords: *Conversation, English, Intonation, Judgement, Tunisian Arabic, Turn taking.*

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I. Introduction

During a conversation, each of the participants performs several tasks that demand haste and chronological precision. He/she perceives and follows his/her interlocutor's speech, prepares his/her utterances in advance, scrutinizes concurrently the time of his/her speech and modifies ideas or words if necessary. Moreover, he/she has to examine the interlocutor's feedback on his/her speech, treats problems if any, uses and understands bodily movements related to speech, and performs many other tasks (Ruiter, Mitterer, & Enfield, 2006) [1]. During this flow of perceptual and productive activities, the speaker works to make sure that the timing and the meaning of his/her speech impeccably line up with those of the interlocutor. The interchanged sequences are presumed to be exemplars of smooth and orderly transitions between speakers and hearers. The well-planned arrangement of these sequences is labelled 'turn taking' in conversation (Ruiter *et al.*, 2006) [1].

Generally, people try to avoid the case of more than one speaker at a turn. They project for the turn transition point in advance to start speaking at the appropriate moment. It is worth mentioning that hearers do not wait for turn end, but they anticipate for the convenient timing to speak. Sacks, Schegloff, and Jefferson (1974) [2] label the timing of turn change a 'transition relevance place' (TRP). The hearer's perfect prediction of the exact moment of TRP assumes his capacity to project for the speaker's 'turn completion point' (TCP). Only by projecting that the potential next speaker is able to appropriately align for his own turn. This projection is guided by a depiction of some kind of cue that signals a speaker's will to take, maintain, or leave the floor.

Many linguists have tried to categorise the types of cues that regulate turn taking. For example, Duncan (1973) [3] examined face-to-face American English conversations and he confirmed that speakers make use of complex signals at turn boundaries. These signals may be grammatical, paralinguistic or kinesic, or any combination of the three. The presence of only one cue does not necessarily entail turn change. However, the more signals occur concurrently, the more the possibility that the listener will take the floor. Once he begins speaking, the speaker typically uses 'a speaker state signal'. The signals, also called 'displays', can be one or more of the six performance signals:

- a- Intonation: Use of a terminal juncture (e.g., a fall tone at the end of a declarative clause).
- b- Paralanguage: Lengthening of the vowel of the final syllable, or the vowel of the stressed syllable of the clause; fall in paralinguistic pitch and/ or loudness, in combination with a socio-centric sequence.
- c- Body movement: Termination of any hand motion or the rest of a tensed hand position.
- d- Socio-centric sequences: Use of stereotyped expressions like 'but uh', 'you know', etc.
- e- Syntax: Completion of a grammatical clause containing a subject and a predicate.

Duncan's (1973) [3] investigation has prepared the path for many other studies on turn taking. While some investigations tried to focus on the interface between two or more signals in combination, others studied only one type. Indeed, transition relevance places interact in a complex way. However, they can be separated for

the purpose of measuring the degree of association between the turn units and the turn completion points (Ford & Thompson, 1996) [4]. This division does not mean that these systems can operate independently. On the contrary, it is an artificial partition that is not real in the minds of the participants in a conversation.

Prosody has been investigated by psycholinguistic experiments as to whether it is a TRP predictive of turn end. For example, Schaffer (1983) [5] carried out a perceptual study to make a comparison between the visual and the non-visual taking turn cues in Standard American English conversations. She found little regularity in the respondents' use of intonation to predict TRPs. She concluded that intonation alone cannot be a sufficient cue to turn taking. However, her results have been criticised for the quality of the recordings, the unnaturalness of the test, and the fact that speaker change is usually non-compulsory in natural conversations. Similar results have been found in another study by Culter and Pearson (1986) [6]. They did a production and a perception study on the turn taking system of British English. They reported a comparable variability in the perception of intonation, with a minor 'downstep' in final pitch contour to indicate turn yield, and a minor 'upstep' in final pitch contour to indicate turn hold. They pointed out that there are not many contours that signify turn yielding.

These findings are different from less recent (Duncan, 1973) [3] or more recent results on English. For instance, Ford and Thompson (1996) [4] investigated the cues that regulate two American English conversations. They shed light on the outstanding role of intonation in marking the organisation of discourse. They present a twofold division between final and non-final pitch contours. The former type includes either the rising or the falling tones, while the latter comprises all the remaining types of pitch contours. They uncover the binary operation of a syntactic completion point together with a rise or fall final pitch contour as statistically significant to turn taking. Nevertheless, they have looked at intonation from a perceptual point of view, being based mostly on acoustic, prosodic and timing signals to manually categorise the boundaries of units (Gravano & Hirschberg, 2011) [7].

Other researchers tried to improve their approach of investigation with regards to intonation in turn taking. In fact, Wennerstrom and Siegel (2003) [8] adopted a more accurate definition of intonational final pitch contours grounded on Pierrhumbert's (1980) [9] ToBi transcription system. The ToBi system (Tones and Break Indices) is 'a system for transcribing the intonation patterns and other aspects of the prosody of English utterances' (Beckman and Elam, 1997, p. 2) [10]. They made use of six phrase final pitch contours: high rise (H_H%), low (L_L%), plateau (H_L%), low rise (L_H%), partial fall (L_L%), and no boundary. They reported that high rise was the most important signal to turn leave (67% occur at speaker change), followed by low pitch contour (40% occur at speaker change). The rest of the phrase final pitch contours were associated with turn hold. Besides, they confirmed some of Ford and Thompson's (1996) [4] results: that intonation, pauses, and complete syntactic units were indicators of speaker shift.

Inspecting the role of prosody in organizing the turn taking system of other languages gave other valuable results. In fact, Wesseling and VanSon (2005) [11] made an experiment on the turn taking system of Dutch conversations. They presented their respondents with natural and synthesized recordings of natural conversations. Their results show that the respondents were able to react and anticipate turns boundaries consistently, based on complete speech and on prosody alone. In some cases, intonation takes priority over the other signals. It can indicate turn maintenance in spite of a syntactic boundary. The intonation pattern with the utmost probability of signifying turn shift was the high rise (H_H%) even if low rise was found to designate turn change too.

As for Swedish, Edlund and Heldner (2005) [12] carried out an investigation on the prosodic aspects of turn. They declared a correspondence between turn end and silent pauses, final syllable lengthening, different intonation patterns (rises, falls, down-steps, and up-steps), drop off of speech rate, intensity patterns, centralized vowel quality, and exhalations. These prosodic features are characteristically situated someplace towards the end of the turn, though not automatically on the final syllable. Besides, they made a distinction between final rise and final fall. A rising intonation is trailed by an equal distribution of speaker change (51%) and speaker hold (49%). This implies that the effect of the rising intonation on Swedish turn taking is unclear.

In English, some intonation patterns are correlated with turn yielding. For instance, a level tone within the range of the speaker's fundamental frequency (f_0) can be regarded as a turn keeper (Duncan, 1972 [13]; Orestrom, 1983 [14]). Besides, falling and rising final pitch contours are treated as markers of intonation completion points in the cases of statements and questions correspondingly (Chafe, 1992 [15]; Ford & Thompson, 1996 [4]). Other prosodic patterns can indicate a TRP; including final syllable or word lengthening or drawling (Duncan, 1972 [13]; Koiso, Horiuchi, Tutiya, Ichikawa, & Den, 1998 [16]) even though contrasted by Orestrom (1983) [14]. These phenomena are usually coupled with alternations in voice quality like creaks (Chafe, 1992) [15]. Chafe (1994) [17] explains that intonation units are fundamental fragments of speech suspended by the human need to inhale. Gravano's (2009) [18] examination of the rising intonation suggests that a high rise (H_H%) indicates turn taking, a plateau (H_L%) indicates turn holding, and a low-rise (L_H%) is unclear.

An intonation transition relevance place is also labeled an Intonation Phrase Unit (IPU). It refers to 'a stretch of speech uttered under a single coherent intonation contour' (Du Bois, Schuetze-Coburn, Cumming, & Paolino, 1993 [19]). Perceiving an intonational pitch contour is affected by many acoustic features including alternations in pitch, duration, intensity, and changes of speech and silence (Chafe, 1994 [17]). According to Cruttenden (1986) [20], two major prosodic features can determine the boundaries of intonation groups: pitch and timing. The pitch pattern, its direction on the accented syllable, and an alternation in the pitch of a previous utterance can show the end of an intonation group. Timing signals comprise an increase in tempo on unstressed syllables, final syllable lengthening, and perceptible pauses of more than 300 msec. Ford and Thompson (1996) [4] found out that the existence of longer pauses (500 msec) made the current speaker restart talking. This might happen because the interlocutor did not take the floor (at 300 msec) and the current speaker wanted to follow up his speech.

People belonging to different cultural and social groups make use of different cues in conversational turn taking (Tannen, 1985 [21]). As for the English language, Clennell (1997) [22] believes that the discourse and pragmatic functions of its prosody seem to be a specificity of the language. They are unusual to most foreign learners of English, regardless of their native language or cultural background. However, a failure in using or grasping English prosodic features can hinder intelligibility. Intelligibility in speech perception being important, I thought that investigating the dynamics of turn taking can be valuable in the Tunisian context. It can help EFL learners in improving their awareness of the intonation that regulates English conversations. It can also facilitate to them the process of predicting and grasping authentic English dialogues.

Furthermore, the investigation of the turn taking system of TA as a mother tongue has remained untested so far and awaits empirical research. A quantitative perceptual study was thought necessary to confirm or disconfirm the findings so far found, or to probably add to the empirical results on turn taking. The major hypothesis is that intonation can organise the turn taking systems of English and TA. In addition to intonation patterns, other prosodic cues can be depicted, including pitch range, filled and unfilled pauses.

In this study, intonational completion points are perceivable units, approximately similar to Cruttenden's (1986) [20] auditory intonation groups. Besides, we follow Ford and Thompson's (1996) [4] intonational units in extracting data from 'spontaneous' conversations. Furthermore, the data can be somehow comparable to Selkirk's (1984) [23] acoustic study, which is based on constructing isolated sentences based on selected criteria of intonational units. On these bases, intonation units are selections of fragments taken from spontaneous conversations, examined in and out of their context. The judgement of intonation groups could be affected by the variable of context (Pakosz, 1983) [24].

The present article addresses three research questions:

- To what extent can intonation operate as a turn-keeper and/ or a turn-giver in English and TA conversations?
- Does intonation play the same or a different role in the turn taking systems of the two languages English and TA?
- Does formal exposure to intonation rules affect the respondents' judgements about the role of intonation in the turn taking systems of the two languages?

To answer the research questions, quantitative and qualitative approaches were combined. A quantitative approach was employed through the use of a judgement test. The judgement test involved forced-choice (FC) questions that reported the respondents' spontaneous reactions towards three perception tests per language. The participants were presented with a limited set of conditions, and asked to choose one acceptable answer. They had to select from the following set of choices: turn take, hold, and leave; +/-speaker change; rise, fall, level; intonation cue or other. Every judgement test took between 45 minutes and one hour. This depended on how many times the respondents needed to hear the fragmented parts of the TV conversations.

The qualitative approach consisted of a documentation analysis of all the reachable documents related to the students' programs. These included: the course objectives of the university students, the university students' pronunciation manuals, the university teachers' manuals, the secondary school students' manuals, and the secondary school teachers' manuals. The information obtained from these documents was used to check the effect of explicit instruction of intonation on the students' awareness of melodic cues at turn transition points. There were three major perception tests applied on both English and TA.

This paper is organised into four major parts. Part two reports the results on intonation as a turn regulator in English and TA. Part three deals with a comparison between the turn taking systems of the two languages as far as intonation is concerned. Part four presents the role of explicit instruction on the respondents' judgements. Finally, part five is the conclusion that recapitulates the main findings and gives the implications of this study on teaching in the Tunisian context.

II. Intonation as a turn regulator in English and TA

2.1. English and TA materials

The materials were extracted from two TV conversations in English and TA. The audio quality was good, as the microphones used in TV studios are properly positioned, with low level ambient noise. The recording was done by the use of digital audio recording software (Syntrillium's CoolEdit 2000). This instrument was selected to preserve the linguistic and paralinguistic characteristics of the conversation, including pitch variations, pitch range, filled and unfilled pauses, final syllable lengthening, breath inhales, duration of hesitation strategies, etc. The software enabled recording and dividing speech into separate files to be analysed in the data analysis phase by the Praat software. Praat is an 'open-software tool' used for the edition and labelling of the speech signal. It enabled the division of speech into small portions (Ps) of speech grounded on the following basis:

- P1: Turn hold+ (H%) + syntactic completion points + semantic completion point.
- P2: Turn hold (H%) - syntactic completion points - semantic completion point.
- P3: Turn hold (H%) - syntactic completion point + semantic completion point.

A contextualised syntactic completion point (SCP) means that there is a recoverable subject and an overt predicate, while an isolated one fulfills the notions of sentence well-formedness. A semantic completion point (SECP) means that there is a complete proposition. Like turn hold, the same division was done in cases of turn take and turn leave. The idea of dividing speech into portions was done following Wichmann and Caspers' (2009) [25] study on 'melodic cues to turn-taking in English: evidence from perception'. In appendix A, tables A1 and A 2 present the isolated sentences in English and TA respectively, while tables A 3 and A 4 present the contextualised sentences.

The same isolated sentences were contextualised to preserve the effect of context on turn judgement. The same sentences were also 'filtered' from speech. That is to say that all the components of intelligibility were deleted. Only the pitch of voice was maintained as a melodic indicator of the turn taking mechanism. The three types of portions: isolated, contextualised, and filtered were the basis of analysis for the perceptual data. The same segmentation was made in English and TA. Fig. 1 below presents how the 'Praat' software presents a sentence into a wave form tier, a spectral tier, an orthographic tier.

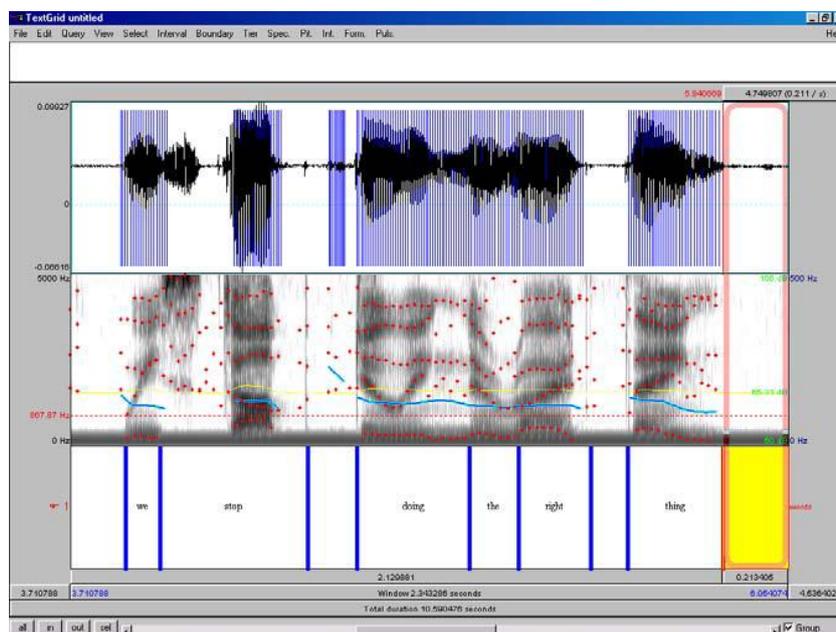


Fig.1. Segmentation of speech by the Praat software

The intonation patterns and other aspects of prosody were transcribed by the ToBi system (Tones and Break Indices). The tone tier presents the distinctive pitch events, transcribed as a sequence of high (H) and low (L). The used pitch accents are High pitch accent (H*), Low pitch accent (L*), down stepped High pitch accent (!H*), Low tone followed by a High pitch accent (L+H*), and High tone followed by a down stepped High pitch accent (H+!H*). The edge tones included the phrase accents High phrase tone (H_), Low phrase tone (L_), and the boundary tones High boundary tone H% Low boundary tone L%. The pitch events and their definitions are based on 'auto-segmental analysis' by Pierrehumbert and Hirschberg (1992) [26]. The break index tier indicates the prosodic grouping of words in a sequence by naming the end of every word (from 0 to 4). The scaling is based on the strength of the relationship between a word and the next one (from the most to the least conjoint words).

2.2. Validation of the stimuli

Perceptions have long been considered as ‘a valid data type for the construction of cognitive theories’ (Schütze & Sprouse, 2011. p. 3) [27]. In fact, this study was based on the perception of auditory files and the judgement of intonation phrase units. The quality of the stimuli was assessed in a pilot study. This included checking the clarity of the auditory files and the judgement test. A team of 10 undergraduate students was selected. It represents 10% of the estimated population to this study (Connelly, 2008) [28]. This team was exposed to the fragments of speech, and asked about the clarity of the sound and pitch. They were then provided with ‘the judgement test’, and asked whether there were difficult words or unclear instructions. They were also asked about the adequate time and the convenient number of re-listening needed to answer the questions. This study was piloted in a vacant room, far from external noise.

The obtained information was used to adjust the data gathering procedure. Item analysis was used for the purpose of examining the quality of items as being too simple or too hard to grasp, and as being well-formulated. Some items were eliminated, others modified to extend the time of the administration, and to clarify some of the instructions.

2.3. Participants

Two major groups of participants took part in this investigation: a production group and a perception group. The production group included 2 native speakers of TA and 2 native speakers of English. They were enrolled in two TV conversations in their mother tongues. They represent the control groups to the speech of which the perception groups were exposed. The TA speakers were selected from the same gender (males) to avoid physiological differences in their pronunciations. Both speakers share the same origin to avoid the influence of a different socio-linguistic background on their pronunciations. The English speakers were male educated speakers, coming from Great Britain.

The perception group included 106 participants. They represent one team of English native speakers and three teams of Tunisian Arabic speakers. The TA speakers belong to three educational levels. The first group comprised twenty seven university teachers of English, twelve male and fifteen female speakers. They belonged to different teaching ranks, but had no less than 20 years of exposure to the English language. The majority of them had the opportunity to live in an English speaking community, or had at least visited it.

The second group encompassed 30 second-year students majoring in English at ‘Institut Supérieur des Langues de Tunis’ (ISLT). The group comprised 15 male and 15 female respondents. They were supposed to have studied English during their secondary school formation. In addition, they had two years of intensive exposition to the English language and its rules. They were supposed to have covered analyses of intonation and its functions, both at the levels of production and perception through formal instruction in a weekly two-hour course of phonetics and phonology.

The third group comprised 30 students at their final year of secondary school instruction. The group was composed of 15 male and 15 female respondents. They studied English for at least five years during their secondary school formation. Even though exposed to the language in the classroom, they were supposed to have little instruction on the prosody of the language. The group was selected without any explicit knowledge on intonation, on purpose, to compare their judgements to the ones of the more instructed groups. The two groups of TA students were supposed to be homogeneous in terms of educational and socio-linguistic backgrounds, age, exposure and training in the English language.

The fourth group comprised 17 native speakers of English: 4 male and 15 female respondents. They belonged to different parts of Great Britain, and were a majority of uneducated people. They were present in Tunisia as summer visitors, living in a nearby hotel. Presumably, the group was heterogeneous, as the respondents shared only the factor of belonging to GB. Unfortunately, these respondents were the only available respondents. They were selected for the geographical convenience of the researcher.

2.4. Procedure and method

Participants were tested in a vacant room far from external noise and other distractions. They were asked to fill in their judgements on three perception experiments in each language. In the first perception experiment, the respondents were asked to listen to isolated sentences that end in IPUs. Their task was: 1) to judge the turn type: turn take, hold, or leave, 2) to predict a forthcoming speaker change, 3) to indicate the cue that they used for their prediction, 4) and to select the type of final pitch contour of the fragment. Four major tones were provided for selection (rise, fall, level, and unclear) to facilitate the task for the non-specialists. They were encouraged to provide any other justification that seemed appropriate to them.

In the second perception test, the respondents were exposed to short exchanges of speech. They were asked to judge the same isolated sentences of the first experiment, but within their conversational context. This was done to check the effect of context on the perception of intonation. They had to follow the four tasks of experiment 1. In this third test, the same isolated sentences were filtered from all lexical items, losing all the

semantic and syntactic cues necessary for their understanding. Only pitch was maintained to check the effect of pitch only on the turn recognition.

2.5. Analysis

Statistical tests of significance for nominal data (Phi correlation coefficient) were used to refute or confirm the research hypotheses. The significance level (α) should be less than or equal to (\leq) 0.05, since the degree of freedom equals 1 ($df = 1$). The statistically significant results show the respondents' recognition of turn constructional units and transition relevance places.

2.6. Results and discussion

2.6.1. English data

The SPSS software was used to calculate how many respondents agreed on a specific judgement about a specific test item. The purpose was to refute the null hypothesis of no relationship between the variables. The distribution of the statistically significant agreements over the items of each test was then examined to check which tasks resulted in the largest number of significant items, and what were the cues existing within those items. Prior to this, each fragment was classified as a case of turn take, turn hold, or turn leave. Table 1 presents the turn taking organisation of the English sentences based on the prosodic cues.

Table 1. Turn taking organisation of the English data based on the prosodic cues (in isolation and in context)

	In Isolation			In context	
	Intonation	Turn type		Intonation	Turn type
S1	Final syllable lengthening + L%	Leave	S1	L% + followed by silence + breath inhale of the next speaker	Leave
S2	Declination + L%	Leave	S2	Declination + L% followed by silence	Leave
S3	Downstep + L%	Leave	S3	H* following L% and a pause	Take
S4	Successive inhales + pauses; L%	Hold Leave	S4	High pitch range	Take
S5	Overlap (711 msec) with previous H% + %r Ends in L%	Take Leave	S5	Ends in L%	Leave
S6	Overlap + H%	Hold	S6	Abrupt interruption in a breath pause	Leave
S7	L% Hesitation pause, successive H-	Leave Hold	S7	Interrupted a previous speaker in a breath pause by H*	Take
S8	Overlap followed by !H*+ declination	Hold	S8	Interrupted by [mm] and followed; Ends in L-	Hold Leave
S9	Pause + final syllable lengthening + L%	Leave	S9	Final syllable lengthening +L% ; H* that follows a L% of a previous speaker	Leave Take
S10	A high pitch range; Overlaps + ends in H%	Take Hold	S10	Ends in H%	Hold

The sentences with statistically significant results were combined for discussion, based on the groups of respondents. The respondents' classifications were judged to be similar or different to the sentences already investigated by the use of the ToBi transcription. In other words, the acceptable answers were the ones that corresponded to table 1. The SPSS software provided tables that represent the phi value, and the critical values under which the correlations are no more significant.

2.6.1.1. Description of the English language results

Each level of respondents was able to select successfully intonation as a cue in regulating the perceived conversation. Surprisingly, the groups agreed among themselves on some sentences but not on others. Concerning the sentences that end in L%, the biggest effect of this contour type is found among teachers. They selected the cue of intonation, the appropriate pitch contour, and they recognised the filtered speech. In addition to L%, the respondents were helped by final syllable lengthening (S1), successive inhales and pauses (S4) and hesitation pauses (S7). The Phi values show a moderate to low degree of correlation between the variables (between 0.25 and 0.5). As for the group of university students, they associated turn leave (S5) with the final pitch contour, as did secondary school students (S3). In the second case (S3), the respondents could be helped with downstep towards the end of the turn. Concerning the native speakers of English, they related turn leave

with the cue of intonation only when the sentence (S2) is contextualised. It is a case of declination associated with L% and followed by silence. The phi values show a low degree of correlation as they are ≥ 0.5 .

Dealing with the sentences that end in H%, every level of respondents recognised appropriately the intonation cue in one sentence. Secondary school students made a low degree correlation (in S6) between turn hold and the cue of intonation ($\phi = 0.3$). The native speakers of English associated turn hold (of S10) with H% with $\phi = 0.45$. Both sentences represent cases of overlap after which the speaker maintained the floor. As for the university students, they recognised the high pitch accent as a cue to take the turn in a filtered sentence (S5). Last but not least, the teachers made a negative correlation ($\phi = -0.43$) between turn leave and the cue of intonation in a contextualised sentence (S6). It is a case of an abrupt interruption in a breath pause. Table 2 below summarises the statistically significant phi values based on the cue of intonation.

Table 2. Significant phi values based on the cue of intonation in English: SS sts (secondary school students), Usts (university students), Ts (teachers), EN (English native speakers).

		L%	Phi value	H%	Phi value
Educational level	SS sts	S3: turn leave + L%	0.37	S6: turn hold +cue of intonation	0.3
	U sts	S5: turn leave + L%	-0.3	S5: filter: turn take + H*	0.4
	Ts	S1: turn leave + cue of intonation S4: filter: turn leave + L% S7: turn leave + L%	0.43 -0.3 0.47	S6: context: turn leave + cue of intonation	-0.43
	EN	S2: context: turn leave + cue of intonation	0.5	S10: turn hold + H%	0.45

2.6.1.2. Discussion of the English language results

The results of these tests suggest that the cue of intonation plays a moderate to low role in regulating turn taking for the respondents. The cue of intonation is slightly more important to teachers, when compared to the other groups. Only the low level tone appears to be a strong turn leaving device, identified by all the respondents. However, turn hold has been associated with a high final pitch contour only by the English natives. There are many cases of turn take especially for interruptions and overlaps. Yet, only university students related the high pitch accent with turn take. The other respondents could be using other cues in such conditions.

The respondents using the cue of intonation found it easier to judge isolated sentences than filtered or contextualised sentences. The filtered speech was statistically significant to teachers and to university students only in two sentences. The other respondents were not able to perceive the appropriate pitch contour of filtered sentences. Indeed, all the respondents laughed when they were exposed to filtered sentences for the first time. Perhaps, the wording in speech is vital in the recognition of turn taking. This result on filtered speech goes in line with Oliveira and Freitas' (2008) [29] findings on the role of prosodic features in organising turn taking. They separated the prosodic from the lexical cues, and found great variability in the listeners' use of the cue of intonation.

Concerning context, intonation helped only the native speakers of English and the teachers to recognise turn leave. Cues other than intonation could help in the organisation of contextualised speech. Turn leave was correlated with a low final pitch contour by all the respondents. This result supports Local's (1986) [30] findings on a decrease in loudness and a large fall in pitch, being consistent with turn endings in English. The final pitch contour H% was associated with turn hold by the native speakers of English. This result has been confirmed by Caspers (1998) [31], asserting that a rise followed by an H% can be understood by hearers as an intention to hold the turn. This can also support Katamba's (1989) [32] claim that a rise in pitch shows a speaker's intention to hold the floor.

The rise that can accompany turn take can be reported especially in cases of interruptions. In fact, university students recognised an H* of a turn take in filtered speech (S5). This can be confirmed by the findings of Yang (1996) [33]. Indeed, she classified interruptions as competitive and non competitive. The former refer to turn changes in transition relevant places (i.e., in pauses), while the latter refer to turn changes based on overlaps. Yang (1996) [33] argues that competitive turns begin with a step up to a high pitch, an increase in loudness, and a change in tempo. No statistically significant results were reported on speaker change.

2.6.2. TA data

Table 3 presents the prosodic cues and the turn taking types of the TA data. This includes final pitch contours, filled and unfilled pauses, breath inhales, pitch ranges, etc. The sentences are investigated in and out of context. Sometimes, the turn type is the same in isolation and in context and sometimes not. This is because of the cases of interruptions and overlaps that unexpectedly interfere on the turns.

Table 3. Turn taking organisation of the TA data based on the prosodic cues (in isolation and context)

TA In Isolation			TA In context		
	Intonation + other prosodic cues	Turn type		Intonation + other prosodic cues	Turn type
S1	Ends in H%	Hold	S1	Ends in H% +interrupted in a breath pause + overlap + followed his speech	Hold
S2	Ends in L%	Leave	S2	Same speaker: pause (922 msec) + H*; L%+ breath inhale of next speaker	Hold Leave
S3	Ends in L% + followed by silence (403 msec)	Leave	S3	Preceded by silence (559 msec) + breath inhale	Take
S4	Ends in H% + high pitch range (200 Hz)	Hold	S4	Ends in H%, high pitch range: 200 Hz + followed on.	Hold
S5	Ends in H% Turn hold after an overlap	Hold	S5	Higher pitch range and higher pitch accent than declination during overlap	Take
S6	Successive H-, short inter-pauses; Ends in L%	Hold Leave	S6	Overlap with next speaker + followed by declination	Hold
S7	Ends in H% + high pitch range (218 Hz)	Hold	S7	Ends in L+H* followed by a silence of 506 msec and a filled pause (681 msec) + raising pitch range (230 Hz).	Hold
S8	An interruption of a level tone by a higher pitch range and a high pitch accent; Ends in H%	Take Hold	S8	Ends in H% + followed his speech after an interruption of 268 msec; Followed by Silence (331 msec) + next speaker speech.	Hold Leave
S9	Ends in L% followed by silence (346 msec)	Leave	S9	Initial H+!H* + lengthening of the first syllable <wææ> of the sentence uttered in 632 msec; Ends in L% + silence.	Take Leave
S10	Ends in H%	Hold	S10	Interruption with higher pitch range 205 Hz compared to 132 Hz.	Leave

2.6.2.1. Description of the TA language results

As can be noticed from table 4 below, the Tunisian respondents did not use the cue of intonation in dealing with four TA sentences (S5, S6, S7, S8). Unexpectedly, the group of university students did not use the cue of intonation when the final pitch contour was L%. In addition, none of the respondents selected the appropriate final pitch contour in the case of filtered sentences.

Concerning the sentences that end in L%, the secondary school students correlated turn leave with a low final pitch contour (S2, S9). The group of teachers made the same correlation (S9). In the first case, the prosodic cue is the low final pitch contour, while the second case encompasses a final pitch contour followed by silence. Accordingly, the combination of two prosodic cues gave better results than only one. The low final pitch contour is reinforced by a silence. In context, only the group of teachers selected turn leave and the cue of intonation. The phi values show a moderate to low degree correlation as values range between 0.5 and 0.25. The teachers correlated turn leave with L% with a moderate correlation (0.53). The values in all of the L% sentences show a positive correlation between the variables.

As for the sentences that end in H%, only the university students managed to relate turn hold with a high final pitch contour (S1). They used a negative low degree correlation, with a Phi value of -0.43. Furthermore, the same respondents coordinated turn hold plus the cue of intonation (S4) with a Phi value of 0.36. In another case (S 4), the speaker maintained a high pitch range (200 Hz) to hold the floor. Secondary school students did also relate turn hold and the cue of intonation (S10). They made a negative low degree correlation, with a Phi value of -0.34. Besides, it has been shown that some contextualised sentences turn to be cases of turn take. Indeed, the groups of university students and teachers agreed on a sentence (S3) that begins with a high pitch accent, making it a case of turn take. Furthermore, the sentence is preceded by silence (559 msec) and breath inhale.

Table 4. Significant phi values based on the cue of intonation in TA

	L%		Phi value	H%	Phi value
Educational level	S S	S2: turn leave + L% S9: turn leave + L%	0.48 0.45	S10: turn hold + cue of intonation	-0.34
	U sts			S1: turn hold + H% S3: context: turn take (H*) + cue of intonation S4: turn hold + cue of intonation	-0.43 -0.45 0.36
	Ts	S9: turn leave + L% S9: context: turn leave + cue of intonation	0.53 0.49	S3: context: turn take (H*) + cue of intonation	-0.37

2.6.2.2. Discussion of the TA language results

The results of these tests show that the cue of intonation plays a moderate to low role in the turn taking system of TA. All three levels of respondents used the cue of intonation in making 9 correct correlations. Turn leave has been associated with a low final pitch contour (S 2, S 9, contextualised S9), and turn hold with a high final pitch contour (S1). In the other cases, the respondents associated the turn type with the cue of intonation, without selecting the appropriate final pitch contour. The isolated sentences gave more statistical evidence than the contextualised sentences, with an absence of evidence for the TA filtered speech. The Tunisian respondents could be using other cues for the arrangement of the Tunisian turn taking system.

Turn leave has been related to a low final pitch contour by two groups of respondents out of three: secondary school students and teachers. This finding, not thoroughly confirmed, goes together with the Universalist view of intonation: that the important characteristics of intonation are actually the same in all languages. The result goes in line with Bolinger’s (1989) [34] association between turn leave and L% in cases of some questions (S2), and in cases of declination and finality (S9). However, associating the low final pitch contour with turn end does not confirm the only available work on the turn taking system of Iraqi and Egyptian Arabic. Indeed, Ward and Bayyari (2008) [35] affirmed that the indication of a final pitch contour in English is L%, while it is a ‘steep pitch down-slope, a down-dash’ in Arabic. Concerning context, it helped only the teachers in recognising a turn leave that is followed by a silence (S9).

As for turn hold, the university students recognised a turn hold combined with the cue of intonation (S4) and a turn hold plus H% (S1). Secondary school students did also associate a turn hold plus the cue of intonation. These results, though not generalised among all the respondents, confirm the findings of Caspers (2001) [36]. Her results on the Dutch and the English languages suggest that H% creates a strong perception for turn continuation. Therefore, the Dutch, English and Tunisian Arabic languages share the same perceptual signal of H% that relates to turn hold. Concerning turn take, both university students and teachers associated a high pitch accent with a turn take in a sentence (S3). That sentence is preceded by silence (559 msecs) and a breath inhale. Unlike English, the respondents associated neither interruptions nor overlaps with taking the floor.

III. Comparing turn taking in English and TA

Sacks *et al.* (1974) [2] believe that one of the basics of **any** conversation is the system of turn taking. When a speaker ends his turn, the next speaker begins his turn with ‘almost perfect precision and split-second timing’ (p. 52). However, Cook (1989) [37] thinks that the turn taking mechanism is a language bound and a culture bound phenomenon that cannot be lifted from one language to the other. In this study, there is a comparison between the contribution of intonation in the turn taking systems of English and TA. The comparison is grounded on the three categories: turn take, turn hold, and turn leave.

3.1. Turn taking in English and TA

The English and the TA transcribed recordings revealed that the two languages make use of very similar cues to **take** the turn. First, a speaker can take the floor after a previous completion, i.e. after a low final pitch contour (L%). In the English language, the native speaker can take the turn after an L% followed by an unfilled pause. He can begin his turn with a high pitch accent (isolated S10, contextualised S3, S9) or with a high pitch range (contextualised S4). Similarly, the TA speaker can take the turn after a pause. He can signal this intention by taking a breath inhale (contextualised S3). Furthermore, he can use a higher pitch range and a higher pitch accent than a declination in the speech of a previous speaker (contextualised S5). There is a slight difference in the TA language that is not found in the so far investigated English language. That is a lengthening of the first syllable of a new turn, within a down-stepped high initial pitch accent (S9).

Second, a hearer can take the floor even if the final pitch contour of the speaker is level or high. This can be done by an interruption or an overlap. Indeed, the overlap is one type of interruption. In English, a speaker can take the turn by interrupting a previous speaker in a breath pause, and by using a high pitch accent (S7). Besides, an overlap with a previous H% and a self correction (%r) can enable a speaker to begin a new turn (S5). In the same way, the TA speaker can interrupt a level tone by making use of a higher pitch range and a higher pitch accent than a previous speaker (S8). Table 5 presents the prosodic cues used by the native speakers of both languages to take the turn.

Table 5. Comparing the English and TA cues to take the turn

Turn taking in English		Turn taking in TA	
In isolated sentences	In Contextualised sentences	In isolated sentences	In Contextualised sentences
- Overlap (711 msec) with previous H% + %r (S5). - A high pitch range (S10).	- H* following L% and a pause (S3) - High pitch range (S4). - Interrupted a previous speaker in a breath pause by H* (S7). - H* that follows L% of a previous speaker (S9).	- An interruption of a level tone by a higher pitch range and a high pitch accent (S8).	- Preceded by silence (559 msec) + breath inhale (S3). - Higher pitch range and higher pitch accent than declination during overlap (S5). - Initial H+!H* + lengthening of the first syllable <wææ> of the sentence, uttered in 632 msec (S9).

3.2. Turn holding in English and TA

Like the native speakers of English, the TA speakers make use of approximately similar cues to **hold** the floor. First, a speaker can show his intention to maintain the floor, by using a high final pitch contour. In English, the speaker can either use a final H% (S10) when he has the floor or a down-stepped high pitch accent (!H*) to overcome an overlap. As he gains the floor, he can use declination to continue his idea (S8). Likewise, the TA speaker can hold his turn by a high final pitch contour H% (S1, S8, S10), and a high pitch range (S4, contextualised S4, S7). He can use the same cues to overcome an overlap or an interruption (S5, contextualised S8). As he holds the turn, he can use declination to continue his ideas (contextualised S6).

Second, a speaker can maintain his turn by breath inhales and by inter-pauses. In fact, an English speaker can use successive inhales, and inter-pauses to hold his turn (S4). He can also use successive high phrase accents (H_) with a hesitation pause. The TA speaker can use successive short inter-pauses with H_ (S6). Besides, the TA speaker can hold his turn by a silence of more than 300 msec within his turn, and a high pitch accent (contextualised S2), or a high pitch range (contextualised S7). The latter strategy to maintain the floor was not found in the so far investigated fragments of speech. Table 6 below summarises the cues used by the native speakers of the two languages to hold the floor.

Table 6. Comparing the English and TA cues to take the turn

Turn holding in English		Turn holding in TA	
In isolated sentences	In Contextualised sentences	In isolated sentences	In Contextualised sentences
- Successive inhales + inter-pauses (S4). - Overlap + H% (S6). - Hesitation pause, successive H- (S7). - Overlap followed by !H*+ declination, (S8). - Overlaps + ends in H% (S10).	- Interrupted by [mm] and followed (S8). - Ends in H% (S10).	- Ends in H% (S1). - Ends in H% + high pitch range: (200 Hz) (S4). - Ends in H%. Turn hold after an overlap in BS (S5). - Successive H-, short inter-pauses (S6). - Ends in H% + high pitch range (218 Hz) (S7). - Ends in H% (S8, S10).	- Ends in H% + interrupted in a breath pause+ overlap+ followed his speech (S1). - Same speaker: pause (922 msec) + H* (S2). - Ends in H%, high pitch range: 200 Hz+ followed on (S4). - Overlap with next speaker + followed by declination (S6). - Ends in L+H* followed by a silence of 506 msec and a filled pause (681 msec) + raising pitch range (230 Hz) (S7). - Ends in H% + followed his speech after an interruption of 268 msec (S8).

3.3. Turn leaving in English and TA

Like the cases of turn take and turn hold, the two languages are to some extent similar in the cues of turn **leave**. In fact, one main strategy to relinquish the floor is the low final pitch contour (L%) by the end of the turn in English (S4, S5, S7, contextualised S5) and in TA (S2, S6). In English, the L% can be preceded by a pause plus a final syllable lengthening (S9), or by final syllable lengthening only (S1, contextualised S9). In TA,

however, the cue of final syllable lengthening is not found in the investigated data. After the L%, there could be silence (TA S3, S9, contextualised S9), sometimes followed by breath inhale of a next speaker (English contextualised S1; TA contextualised S2, S8). Besides, the speaker can leave the turn by an abrupt interruption, either in breath pause (English contextualised S6) or by a higher pitch range (contextualised S10). In English, the turn can end in a low phrase accent when the sentence is interrupted (S8). One of the main characteristics of the English data is the declination that is found towards the end of the turns (S2, contextualised S2). Declination can be through a down-step of high pitch accents towards the end of the turn (S3). In TA, some sentences have the same characteristics of down-step (S2, S6, S9). Table 7 presents the English and the TA cues to turn leaving.

Table7. Comparing the English and TA cues to leave the turn

Turn leaving in English		Turn leaving in TA	
In isolated sentences	In Contextualised sentences	In isolated sentences	In Contextualised sentences
-Final syllable lengthening +L% (S1). -Declination +L% (S2). -Downstep +L% (S3). -Ends in L% (S4, S5, S7). -Pause + final syllable lengthening +L% (S9).	-L% + followed by silence + breath inhale of the next speaker (S1). -Declination +L% followed by silence (S2). -Ends in L% (S5). -Abrupt interruption in a breath pause (S6). -Ends in L- (S8). -Final syllable lengthening +L% (S9).	-Ends in L% (S2). -Ends in L% +followed by silence (403 msec) (S3). -Ends in L% (S6). -Ends in L% followed by silence (346 msec) (S9).	-L%+breath inhale of next speaker (S2). -Followed by Silence (331 msec)+ next speaker speech (S8). -Ends in L% + silence (S9). -Interruption with higher pitch range 205 Hz compared to 132 Hz (S10).

3.4. Discussion of English and TA results

The results of this investigation can be discussed in the light of three major points:

- (a) Universality of language.
- (b) Contribution of the final pitch contours and other prosodic cues to turn taking organisation.
- (c) Contribution of interruptions and overlaps in the arrangement of turns.

Comparing the role of intonation and other prosodic cues in the turn taking systems of English and TA, it has been confirmed that the two languages behave in approximately the same way. The findings confirm the Universalist view of language. In fact, Bolinger (1989) [34] believes that all languages share some characteristics, some of which are: (a) Declination (connection between fall pitch with termination); (b) Association of high pitch with questions and non-termination; (c) The existence of local pitch movements on new or informative words. Furthermore, Lieberman (1967) [38] confirms that all the meaningful uses of intonation in all languages may be condensed into a difference between ‘marked breath group’ (that matches with final rise) and ‘unmarked breath group’ (that matches with final fall), in addition to local prominence of independently informative words.

The results of the English and the TA data confirm the findings of many researchers with regards to final pitch contours and other prosodic cues. Related to **turn leave**, Duncan (1972) [13] declares that speakers tend to play signals at the end of their turns. These include (a) any phrase final intonation except a mid level pitch (b) ‘a drawl’ on the last syllable of a final clause (c) a drop in pitch or loudness in addition to other non-prosodic cues. Culter and Pearson (1986) [6] add that long fragments of speech are expected to be turn final. Besides, Bogetic (2009) [39] confirms that pauses, final syllable lengthening, and decrease in intensity are the major indicators for a subsequent speaker to take the floor. In addition, Gravano (2009) [18] affirms that the speakers who intend to end a turn do so by a lower intensity and a lower pitch level than the rest of the turn.

Local and Kelly (1986) [40] believe that there are acoustic phenomena that denote a turn leave. There could be a drop in energy, or in inhaled, cues that may direct interlocutors to the current speaker’s leave. They add that if the speaker intends to leave the floor, he releases his organs of speech. Cruttenden (1986) [20] explains the phenomenon as related to the trans-glottal pressure used by the speaker when he takes the breath in then out of his lungs progressively. Another proposed explanation is that the fall in pitch is physically easier, and shorter in terms of time with maintaining the same interval in F0. Lieberman (1967) [38] believes that a final pitch contour is indicated where ‘pitch is on average lower at the end of an intonation group than at the beginning’ (ibid, p.167). The fundamental frequency goes down as speech goes towards the end of the intonation group. However, Bogetic (2009) states the speaker’s intentions to leave the floor are not really clear by any type of pause, or any prosodic cue.

Concerning **turn take**, Brown, Currie and Kenworthy (1980) cited in Culter and Pearson (1986) [6] believe that the speakers who intend to take the turn or to change the topic of their conversation signal this by rising their pitch in comparison with their prior speech. As for **turn hold**, Wichmann and Caspers (2009) [25]

suggest that only a 'high level contour (H*%) creates the strong perception [...] of a turn continuation' (p. 6). Furthermore, Caspers (2003) [41] confirms that two tones may be correlated to turn holding: a rise followed by a high pitch, or a filled pause followed by a boundary mid level tone. Besides, Gravano (2009) [18] suggests that a plateau (H_L%) has a turn holding effect. He adds that increased final lengthening has turn-holding effects in American English.

According to Mc Carthy (1991) [42], 'The speaker can signal a desire to continue a speaking turn by using non-low pitch, (p.104). In addition, Coulthard (1977) [43] suggests that the 'speakers who have not yet formulated what they want to say tend to indicate their intention [...] by an audible intake of breath and thereby incorporate the silence into their turn' (p. 63-64). However, the existence of these short pauses during the turn can be an opportunity for a hearer to interrupt. Besides, holding the floor can also take place by rejecting interruptions, and 'by speaking more loudly, more quickly and in a high pitch' (Coulthard, 1977. p. 63-64) [43]. In fact, Coulthard (1977) [43] believes that the speaker is vulnerable whenever there is a completion, and by the end of any completion. This was identified in both English and TA as many cases of turn leave occurred by means of an interruption in a breath pause, or a hesitation pause or by an overlap.

In terms of temporal aspects, Sacks *et al.*, (1974) [2] assume that extended overlaps and long silences are avoided in taking the turn. They label this phenomenon as 'no gaps/no overlaps' principle. Bogetic (2009) [39] believes that interruptions are characterised by some principles in their prosodic realisation. They are not simply troublesome or at random. He presents three major types of interruptions: turn-competitive, cooperative and misprojectional. A turn-competitive interruption can take place when a speaker intends to continue his turn, but is interrupted. This type of interruption is prosodically marked by a prominent rise in pitch and sometimes in loudness. This type of interruption is found in both English and TA data.

The second type is cooperative interruptions, which are uttered to support the speaker's point of view. The pitch height is lower than competitive interruption, but it is still raised. In the present data, this type of interruption is found especially in the case of backchannels. Backchannel responses represent a type of linguistic feedback, also referred to as continuers because they point to the current speaker to follow on his talk (Duncan, 1972) [13]. The third type is misprojectional interruptions. It reflects the hearer's wrong projection of a probable transition relevance place. Its pitch goes in line with the average values of the speaker's pitch. The third type is also found in both English and TA. In our data, the speaker tries to correct his abrupt interruption by words of apology, or an explicit demand to take the floor. Bogetic (2009) [39] declares that the speakers of a conversation use the prosodic information in a strategic way to reach their interactional goals. He adds that there is a noteworthy systematicity in the prosodic realisation of interruptions. The pitch levels depend on the type of interruption. Accordingly, he proposes a turn taking model where he supposes that breaking the turn taking rules can be compensated by the prosodic features namely pitch level.

In a nutshell, neither the TA nor the English native speakers were able to identify all the intonational or prosodic cues to turn taking. They were not capable of classifying the turn types of their mother tongues. This is explained by Coulthard (1977) [43] who declares that 'intonation, the systematic patterning of prosodic features, is of course also a problem area_ whereas native speakers have no difficulty using the system communicatively, they find it very difficult to introspect about the significance of the choices they make, and even to produce citation forms reliably and correctly' (p. 96-97). In other words, the native speakers are able to use the prosody of their mother tongue to communicate, but are not really aware of the prosodic system. Another explanation can be the lack of explicit instruction on prosodic matters related to the phenomenon of turn taking. The forthcoming section investigates the role of explicit instruction of intonation on the respondents' judgements of turn taking.

IV. Role of explicit instruction on intonation on the respondents' judgements

The surveyed documents are: the university students' manuals, the university teachers' manuals and course objectives, and the secondary school students' and teachers' manuals. The documents show that university students are explicitly instructed on intonation in terms of theory and practice, form and function. The instruction begins in the first year, and is reinforced in the second year. Accordingly, the students should be able to recognise the intonation forms (fall, rise, level, fall-rise, rise-fall) included in the judgement of this investigation. As they are exposed to authentic dialogues in the classroom, they should be able to understand the authentic dialogue presented to them in this research. Besides, depicting the functions of intonation in the classroom could facilitate their understanding of the intonation functions of the present dialogue. For instance, they should recognise the intonation of greetings, apology, criticising tactfully, etc.

The students could understand when the speaker intends to take, hold, or leave the floor, but intuitively. In fact, they have not been taught on the turn taking system of the language. In their third year, they study the notion of 'turn taking' in the courses of stylistics or pragmatics. However, they can guess a continuation in the speaker's turn through the rising tone, and a sense of finality in the falling tone. They were exposed to this while

studying the intonation of lists. Besides, they can relate yes/no questions to the rising tone, wh-questions and declarative sentences to the falling tone.

Accordingly, the university students should be able to recognise the different intonation forms of the questions and some of the declarative sentences of the investigated data. Indeed, they were able to coordinate a turn leave with a low final pitch contour in an isolated English sentence. They also coordinated a high pitch accent with a turn take in a filtered sentence. Concerning the TA data, the university students correlated a turn hold sometimes with a high final pitch contour, and some other times with the cue of intonation. They also related a high pitch accent with a turn take in a contextualised sentence. The recognition of some turn types in the two languages could be explained by the fact that English and TA are intonation languages. Both have some prosodic features in common such as declination, association of high pitch with questions and non-termination, existence of local pitch movements on new or informative words, etc.

Concerning secondary school students, they were not explicitly instructed on intonation. However, they were able to recognise some turn types in English and TA. They coordinated a turn leave with a low final pitch contour, and a turn hold with the cue of intonation in the English data. In TA, they related two cases of turn leave with a low final pitch contour, and a turn hold with the cue of intonation. Though the correlations are infrequent, the secondary school students managed to show that the mere exposition to the language is important.

The number of correlations is little when compared to a long formation in pronunciation. This could be explained by the fact that not all the students attend the courses of pronunciation. Some of them believe that it is unuseful to study pronunciation at all. Furthermore, many non-specialists are teaching pronunciation to the students. They change the communicative value of the drills into mere listening or question-answer exercises. In fact, Kenworthy (1987) *cited in* Nunan (1991) [44] believes that there are six major factors that affect the learning of pronunciation. These include 'the native language, the age factor, the amount of exposure, the phonetic ability, the attitude and identity, and the motivation and concern for good pronunciation' (p. 106-107). He adds that a teacher of pronunciation can influence his learners in three basic ways:

- (a) That good pronunciation could facilitate comprehension.
- (b) That intelligibility and communication effectiveness is more important than a native-like pronunciation.
- (c) That listening to the authentic speech and practicing pronunciation outside the classroom can reinforce their competence in the English language.

In a nutshell, explicit instruction on intonation did not give valuable results as expected. Probably, the university students together with the secondary school students could be using other cues than intonation in recognising turn taking cues. Further implications of intonation teaching are provided within the conclusion of the article.

V. Conclusion

In conclusion, the two studies have shown that intonation plays a moderate to low role in regulating the turn taking systems of English and TA. Both languages share about the same prosodic cues that organise conversation. Moreover, explicit instruction on intonation did not influence the respondents' judgements on turn taking. The findings of this investigation are important in three ways. First, this study revealed the **turn taking system** of Tunisian Arabic, not previously examined. Second, it identified empirical grounding for the importance of intonation as a cue in regulating the intonation languages English and TA. Third, the findings of this investigation are important for practical applications. Indeed, this investigation shows that the Tunisian learners need more instruction on intonation to be more aware of the English conversational system.

VI. Teaching in the Tunisian context

The Tunisian context is non supportive to the practice of the English language outside the classroom. In the classroom, the Tunisian students are exposed to the English language beginning from the sixth year of their primary school. However, the strategies of turn taking have rarely been the focus of the teaching curricula. In fact, there are few, if any teaching materials that focus on managing the turn taking system of the foreign language. For example, teaching the cues to manage a conversation: to take, hold, leave or interrupt the floor is hardly found in any program. Besides, teaching the use of body language in organizing a conversation is almost absent.

Although teaching is judged as 'a very personal activity' (Richards & Lockhart, 1994) [45] based on a sum of personal beliefs, the Tunisian teaching generally follows the traditional roles of teacher and student. The teacher controls the organisation of speech and is the first responsible for assigning turns to the students. Taking the permission before talking is one of the classroom conventions set by the teacher from the beginning of the semester. Accordingly, the organised behavior of the students in class overrides the practice of the language and the reinforcement of their communicative competence. Furthermore, the traditional assessment compels the

students to learn by heart general rules of pronunciation, or a list of transcribed words. They learn for the sake of the grades not for the sake of communication. Instead, there should be well-equipped language laboratories to facilitate the learning process. Moreover, there should other forms of assessment such as interviews, portfolios, observations, etc.

VII. Teaching implications

7.1 Teaching discourse intonation

Teaching discourse intonation can be the key to efficient cross-cultural communication (Clennell, 1997) [22]. Indeed, the coherence of spoken English is sustained by the prosodic features of the language. Therefore, some principles of English prosody must be set in the curriculum selection. This includes the role of prosody as: an information marker (of main stress), a discourse marker (given vs. new information), a conversational manager (turn taking management or collaboration between interlocutors), an attitudinal marker (mood/ feeling of the speakers), a syntactic marker (boundaries of clauses, word classes), and a propositional marker (intention of the speaker).

Second, it should be emphasised that intonation is systematic and grammatical through the following principles. First, intonation groups can be recognized acoustically. Second, main stress should occur on only one item of the IPU, and is it is perceptually salient by means of pitch change. Third, unmarked main stress is normally situated at the end of the intonation group, whereas main stress can take place on any word for contrastive reasons. Fourth, a change in the speaker's pitch can mark the inherent completeness or incompleteness of the speaker's turn. Finally, the choice of a specific type of pitch is always significant, and it is part of discourse competence (Clennell, 1997) [22].

Concerning the teaching activities, teachers should expand their students' receptive awareness of the prosodic skills before working on production. Chun (1998) [46] suggests introducing technology in the instruction of intonation in four precise areas. First, the students should visualize intonation through pitch-tracing softwares. The softwares should depict the direction of pitch change (rise, fall, or level), its range (high or low), its speech (abrupt or progressive change), and its place (on which syllable in the word). Besides, the software should address all the levels of communicative competence including grammatical (e.g., show that there is no one to one relationship between the intonation pattern and the sentence type), attitudinal (e.g., surprise), discourse (e.g. stress a pronoun for a contrastive function) and sociolinguistic (use appropriate pitch). The first used utterances should not contain voiceless sounds because they cannot be visualised on the pitch curves.

Second, the learners should be provided with authentic data to sharpen their perceptual skills. They should pay attention to the intonation curves. They can be asked to determine the attitude or nuance of the utterance. After perception tasks, they are required to practice the dialogue. They need to record themselves, and then to compare their tracks with the ones of the English natives. They can role play a conversation on a parallel topic, record themselves and pitch-trace their utterances. The selected software should record the performance and the progress of the students over time so as to facilitate self or peer correction. Teachers' proficiency in the domain of acoustics can enable the practice of Chun's (1998) [46] technology in the Tunisian context. Indeed, the 'audacity' software, the 'Praat' software, the ToBi system are examples of softwares that can facilitate transcribing intonation patterns and other aspects of prosody.

3.5. Teaching strategic competence

Strategic competence refers to 'the verbal and non-verbal communication strategies that may be called into action to compensate for breakdown in communication due to performance variables or to insufficient competence' (Dornyei & Thurrell, 1991, p. 16) [47]. If the students are unable to understand the turn organisation of a conversation, this is because of the underdevelopment of strategic competence. For this reason, it has been thought that it is important to include training on strategic competence in the communicative syllabi. This can be done through the development of activities that reinforce the use of the following strategies: discourse fillers (e.g., well, I mean, actually), going off the point (to escape the answer), oral paraphrase (e.g., so you are saying that), circumlocution (in the case they cannot find the exact word to communicate their ideas), appealing for help and hesitation strategies (lexical and non-lexical fillers including filled pauses) (*ibid*). Nguyen and Mai (2012) [48] propose teaching conversational strategies through video clips. These clips can illustrate the conversational strategies in real life situations. While watching, the students can be asked to do observation tasks, and then practice the strategies by role playing in similar situations.

Appendix A: English and TA corpora

Table A 1. English corpus of isolated sentences

English S1	Would you accept that this recession is an enormous test of the credibility of the unions?
English S2	What does this fighting of the job cuts entail?
English S3	Disappointment as a word, I would use the word frustrated rather than disappointed.
English S4	Steven, let me put this to you this way err the all idea that we give money to the labour party to buy policy is is completely wrong and fallacious.
English S5	If you tell, if you tell prime minister Gordon Brown that you're going to withdraw your financial support which the labour party depends on
English S6	The implication, the implication is that.
English S7	Look, hang on a minute, you as a very union leader who was pictured in one of Britain's tableau newspapers, with two women alongside you with T-shirts, with British jobs for British workers, you were stoking the atmosphere.
English S8	If you want to fight for your members' jobs, if you want leverage.
English S9	Well, that's true, but I'm not here to answer for the global economic downturn.
English S10	Well, I just want to say your influence has waned, err and it's becoming more difficult

Table A 2. TA corpus of isolated sentences

Table A 2 includes the Arabic script (AS) the phonetic transcription (PT) and the English translation (ET) of the TA data.

TA S1	AS	هل سيحقق العمل نفس النجاح اللي حققوا مع لمين النهدي
	PT	/hæl se juhɑqqiq æl ʕɑmæɪ nefs enneʒeɪh elli hɑqqu mʕæ lemi:n ennehdi /
	ET	Will the work fulfill the same success it fulfilled with Lamine Ennahdi?
TA S2	AS	معا مدام كنزه شنيه الغارق شنيه الفرق
	PT	/mʕæ 3: mɑdɑ:m keznɔ ʃniʒið el feereq ʃniʒið el fɑrɑ/
	ET	With Mrs Kenza what's the difference, what's the differentiation?
TA S3	AS	موش ساهل لآكن المراهنة تمت
	PT	/mu:ʃ seehel leekɔn elmura:hnɔ temmet/
	ET	It's not easy, but the challenge is given.
TA S4	AS	أنا - منصف دويب مرحبا بيبك في برنامج هذا أنا
	PT	/ʔ: 3: monsef ɔwi:b 3: mærhbe bi:k fi bɑrneemɛʒ hee ð ð ene/
	ET	Moncef Dwib, you are welcome in the program , "This is me"
TA S5	AS	لا رعب حاجة أخرى موش رعب ما وصلناش لمرحلة الرعب ولكن كان تخوف
	PT	/leʔ roʕb hæʒɔð oxrɑ mu:ʃ roʕb me wʕelneef lmarhelt erroʕb wlekkɔn keen tɛxɑwwuf/
	ET	No, horror is something else, not horror. We did not reach the phase of horror, but it was fear.
TA S6	AS	هو فعلا الشهرة متاع العمل وشهرة لمين خلات العملية تظهر معناها موش كاي خصومة تصير
	PT	/huwwɔ<SIL>fiʕlen<SIL>eʃʃohrɑ mteeʕ elʕæmæɪ w ʃohrɔt lemiin XAllet elʕæmelijjɔ toðhor mæʕnehɔ mu:ʃ keʔejj Xuʕu:mɔ [ejji] tʃiir/
	ET	It is indeed, the fame of the work and the fame of Lamine made the operation seem, I mean, unlike any happening litigation.
TA S7	AS	أهلا وسهلا بيبك .. الإبتاسمة هذبة باش أنا استقبلتك بيبها وباش تتواصل معاك إن شاء الله
	PT	/ehlɔ we sehɪɔ biik<SIL>eleptiseemɔ eðijjɔ bʔ3: n3: stɔqbeltek biihɔ wbeʔ tɔtwa:ʂɔɪ mʕææk inʔeeʔ ɑlɑ:h/
	ET	You are welcome, this smile I will, I welcomed you with it, and it will continue with you if God wills.
TA S8	AS	وسامحتني والكتاب هذابيا معناها أاا معتنتها المكى وزكية مسرحية ثم حولتها لكتاب
	ET	/ 3: wɔɪɔ <overlap> w sæmæhni wɔɪ kteb heðejɔ mæʕneehɔ 3: mæʕnɔthɔ el mækki w zækijjɔ mɑsɾɑhiʒið θommɔ hæwwɔlthɔ lkteeb/
	ET	And excuse me, and this book, it means err, it means "Elmakki and Zakia" is a play, then you transformed it into a book.
TA S9	AS	ويبدو أنو أصبح من الممكن ما نقولش ساهل لكن نقول أصبح من الممكن أن تبدل لممثل وتحقق نفس النجاح
	PT	/Wææ jebdu: ennu 3: ʌʂbɑhɑ minɔ lmumkin mɔ nqu:lɔʃ ðssehel æmɔ minɔ lmumkin æn θæddɔɪ lmumæθθɔɪ we tuhæqqiq næfs ænnejeh /
	ET	And it seems that it became possible, I don't say easy, but I say it became possible to change the actor and to fulfill the same success.
TA S10	AS	انت قلت كنت كنا نخاف عليك من عقدة لمين يعني ما عنديش
	ET	entɔ entɔ qɔɪt konnɔ neXAlɪfu ʕæleikɔ min ʕoqdet lemiin jeʕni mæʕnehɔ mæ ʕændiɪʃ/
	ET	You said you we feared for you from the complex of Lamine, it means I haven't.

Table A 3. English corpus of contextualised sentences

Dialogue 1:	
A.	Would you accept that this recession is an enormous test of the credibility of the unions?
B.	No, not really. I don't think the unions' response for the current situation...
Dialogue 2:	
A.	What does this fighting of the job cuts entail?
B.	Oh, well I think first of all its to err...I mean there is no point in arguing there's so much, we've got some strategies from government and so unite this fighting with the government.
Dialogue 3:	
A.	Can you tell me that you're not disappointed with the way the labour government is dealing with this recession, dealing with the fate of working people?
B.	Disappointment as a word, I would use the word frustrated rather than disappointed (pause).
Dialogue 4:	

A. Over this government, surely that is the first message you have to get across. B. Steven, let me put this to you this way err the all idea that we give money to the labour party to buy policy is is completely wrong and fallacious.
Dialogue 5:
B. But we are not doing it at all or not doing it as much and it wants more not less so frustrated A. If you tell, if you tell prime minister Gordon Brown that you're going to withdraw your financial support which the labour party depends on B. No, no.
Dialogue 6:
A. Not what I was saying at all B. well well the implication the implication is that A. well, let's talk it through, you said to me that as far as you are concerned, the labour government is still pursuing a new labour ideology which does not suit per all times.
Dialogue 7 :
B. well, yes I did, I did worry about that because I also worry that I knew that BNP are activists there, trying to turn it into err a political issue err of politics that are completely reject, so yes A. Look, Hang on a minute, you as a very union leader who was pictured in one of Britain's tableau newspapers with two women alongside you with T-shirts with British jobs for British workers you were stoking the atmosphere.
Dialogue 8:
A. if you want to [no] fight for your members' jobs, if you want leverage B. mmm A. over this government, surely that is the first message you have to get across
Dialogue 9 : (Lines 21, 22)
A. There would be no business B. Well, that's true, but I'm not here to answer for the global economic downturn.
Dialogue 10: (Lines 99, 100, 101)
B. We are able to get some influence, we do err we are not without influence A. Well, I just want to say your influence has waned err and it's becoming more difficult B. It's not enough

Table A 4. Translation of the TA corpus of contextualised sentences

Dialogue 1:
A: 'The artistic flame is, er er but the problem is: 'Will the work fulfill the same success it fulfilled with Lamine Ennahdi? B: Yes, that's it, and was that fear or worries?
Dialogue 2:
A: Then er er came, I mean, you changed everything you changed the actor and you changed the period. With Mrs Kenza what's the difference, what's the differentiation? B: There is no difference except that the actor changed, but the career, the career, the idea is the same.
Dialogue 3:
A: What changed was the actor, and it was not easy to change an actor named 'Lamine Ennahdi', a famous star with as many fans, with that big cultural weight, it was not easy to change Lamine Ennahdi. B: It's not easy, but the challenge is given.
Dialogue 4:
A: Moncef Dwib, you are welcome in the program "This is me" . This is your file with me. B: Haha. A: A file that contains, contains
Dialogue 5:
A: Horror, I felt sometimes you were B: No, horror is something else, not horror. We did not reach the phase of horror, but it was fear.
Dialogue 6:
A: It is indeed, the fame of the work and the fame of Lamine made the operation seem, I mean, unlike any happening litigation. B: (overlap with the next turn) Yes yes that's it. A: In the artistic domain
Dialogue 7 :
A: You are welcome, this smile I will, I welcomed you with it, and it will continue with you if God wills. B: Er er, Moncef Dhouib, you are welcome in the program 'This is me'. This is your file with me. A: haha.
Dialogue 8 :
A: Err B: And excuse me, and this book, it means err, it means "Elmakki and Zakia" is a play, then you transformed it into a book. A: Yes. B: Then you did a film with the idea of the 'Hen'; I felt you were still thinking of what remained from 'Lamine Ennahdi'.
Dialogue 9:
A-What changed was the actor, and it was not easy to change an actor named 'Lamine Ennahdi', a famous star with as many fans, with that big cultural weight, it was not easy to change Lamine Ennahdi. B- It's not easy but the challenge was given. A: Yes.

B: And it seems that it became possible, I don't say easy, but I say it became possible to change the actor and to fulfill the same success.
Dialogue 10:
A: You said we feared for you from the complex of Lamine, it means I haven't.
B: I mean in that period of hesitation.
A: All is fine.

Appendix B: List of abbreviations

Abbreviation	Complete word
AS	Arabic Script
df	Degree of freedom
EFL	English as a Foreign Language
EN	English Natives
ET	English Translation
FC	Forced choice
F0	Fundamental frequency
GB	Great Britain
Hz	Hertz
IPU	Intonation Phrase Unit
msecs	Milliseconds
Phi	Phi coefficient (ϕ) is a measure of association between two binary variables.
Ps	Portions
PT	Phonetic Transcription
S	Sentence
SCP	Syntactic Completion Point
SECP	Semantic Completion Point
SIL	Silence
SPSS	Statistical Package for the Social Sciences (software)
SS sts	Secondary School students
TA	Tunisian Arabic
TCP	Turn Completion Point
ToBi	Tone and Break indices system
TRP	Transition Relevance Place
Ts	Teachers
TV	Television
Usts	University students
%r	A tone tier diacritic used to denote a restart with a new intonational phrase after an interrupted or unfinished intonational phrase. It can occur when the speaker suddenly stops speaking, then begins again with the intention of repairing.

Appendix C: List of phonetic symbols (based on the ToBi system)

Contours	Pitch Movements		ToBi Transcription
	Types	Labels	
Pitch Accents	'Individual' Tones	High pitch accent	H*
		Low pitch accent	L*
		Downstepped High pitch accent	!H*
	Binary Tones	Low tone followed by a high pitch accent	L+H*
High tone followed by a downstepped High pitch accent		H+!H*	
Edge Tones	Phrase Accents	High phrase tone (Leading Tone)	H ₋
		Low phrase tone (Trailing Tone)	L ₋
	Boundary Tones	High boundary tone	H%
		Low boundary tone	L%

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