

*Perception and Interpretation
of English Intonation
by Arabs*

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Abstract

This paper outlines an experiment designed to assess Arab's perception and interpretation of English intonation. Subjects were 30 native Arabic speakers majoring in English. Test material was a set of 21 minimally paired sentences, differing in intonation only, or presenting the same intonation pattern twice, spoken on a tape by a native English speaker. The task was to decide whether the two sentences in each pair have the "same" or "different" intonation pattern and to assign meaning (s) of the provided glosses according to the previous judgement. The analysis of the responses indicates a clear hesitation in perceiving intonation and in assigning meaning to intonation patterns tested in this study. This hesitation, however, is not attributed to intonation interference; rather, it seems to be a result of faulty instructional process. English pronunciation is usually taught to second language learners with great emphasis on the language segmental units. Language learners usually preserve this knowledge when they are moved into suprasegmental situations. We thus propose that English pronunciation is to be introduced in suprasegmental units instead of segmental units.

Introduction

The studies of the non-native use of English sound patterns by adults have tended to focus attention on production and perception of sound segments; among the studies on the issue of second language acquisition, few studies have dealt with the production of the suprasegmental aspects of English phonetics (i.e. speech timing, stress, rhythm and intonation) (Flege, 1984; Mitleb, 1984, 1985). Thus, most of the few studies on non-native use of English intonation are production studies. The comprehension and perception of intonation which is less obvious though no less important aspect of second language device has rarely been focused on by researchers in this discipline. (Berkovits, 1980). The lack of studies in this area is most possibly because the function of intonation is vaguely defined in curricula, textbooks and research in teaching methodology. And only recently has the important role of this aspect of foreign language acquisition been defined more clearly (Gutknecht, 1977; Germer, 1977).

Whether or not intonation is conceived as having a grammatical function (Halliday, 1970) or a partly attitudinal and partly grammatical one (O'Connor and Arnold, 1973; Wilkins, 1974), it is seen as a conventional linguistic system which plays an important role in the process of communication. This implies that since the central goal of learning a second language is to be able to communicate fully in all situations, it is to be recognized that incorrect intonation patterns, whether in perception or production, obscure communication with native speakers of the target language.

Although grammar plays an important role in the process of communication, second language teachers and researchers contend that a correct command of intonation is more important than grammar for communication (Cook, 1968:IX). Since the ability to fully communicate in all speaking situations has been gaining ground as central to the ultimate goal of learning a foreign language, Gutknecht (1977) holds that inaccurate production and/or perception of intonation tunes of the target language is expected to lead to disruption of communication with native speakers. He considers mastery of intonation patterns of the target language both an essential feature of good accent and good ear as well as a decisive factor in the communication process. Gutknecht (1977) goes on to argue that the eminent importance of intonation lies primarily in its attitudinal function more than in its grammatical one. Whereas native speakers of the target language according to Gutknecht (1977) may expect segmental, grammatical and lexical problems in the speech of foreign language learners, they perceive mistakes in intonation as reflexion of wrong attitude. In light of this, any faulty perception or production of individual segments, grammatical usage, and lexical choice is usually counterbalanced by semantic content of the utterance and by extralinguistic factors (Cook, 1968; Gutknecht, 1977). In other words, native speakers can probably be more tolerant of such mistakes than of suprasegmental ones. The reason behind this is that native speakers usually perceive the inaccuracies in intonation performance of non-native speakers as a reflexion of wrong attitude (Gutknecht, 1977). By the same token, the non-native speakers' faulty perception of the patterns of intonation of the target language posits improprieties of performance that entail the frequently-talked-about exchange disruption between the native and non-native speakers of the target language. One can, therefore, agree with Gutknecht (1977) and Cook (1968) that an ac-

curate command of the perception and production of intonation patterns of the foreign language is more important than the correct production and perception of individual sounds and sequences of sounds.

The few studies on the perception of the suprasegmental aspects of the target language have revealed that second language learners attempt to hypercorrect their perception behaviors to make them conform with segmental discrete and sequential units which constitute their conscious knowledge (Tarone, 1972, 328; Berkovits, 1980; Flege, 1984; Craz-Ferreira, 1984; Mitleb, 1986). Tarone (1972) assumes that the linguistic knowledge which second language learners have is often limited to the segmental aspects of the sound patterns of the target language. This limitation is possibly a result of the previous direct training on the phonemes and distinctive features that learners of a second language usually receive more often than on suprasegmental aspects. Such aspects are said to have greater effect on the perception of second language utterances (Tarone, 1976; Flege, 1984; Mitleb, 1985). Thus, Flege (1984) reports that Arabs, in general, have difficulty in perceiving the difference between voiced and voiceless obstruents on the basis of vowel duration difference of voicing characteristic of English in word-final position. This difficulty was also found by Mitleb (1986) in his study of Arabs' identification of English weak-form words. He suggests that Arabs' "conscious knowledge," of English segmental units, to borrow a term from Tarone (1972), interferes in the perceptual decisions of English weak-form words.

Intonation is considered not only more important than grammar (Cook, 1968, ix) but also as the decisive component of better communication which is the ultimate aim of second language learning (Gutknecht, 1977). Thus, due to this importance given to intonation among other suprasegmental aspects of second language, the purpose of this study is to investigate Arabs' perception and interpretation of two intonation tunes in English: Falling and Rising tunes. Falling tune is associated with a pitch which descends from a higher level to a lower one whereas a rising tune is associated with a movement from a lower pitch to a higher one (O'Connor, 1987). Pitch is the variation of the frequency of the vibration of a speakers' voice. As for interpretation of intonation tunes, each of the two intonation patterns is used with a number of speech types; a falling tune usually expresses definite and complete statements, business like Wh-questions, agreement tag-questions, strong commands, strong exclamations, and response yes-no questions, whereas, rising tune expresses soothing statements, statements as questions, friendly Wh-questions and yes-no questions expecting response (O'Connor, 1987). The tasks of the subjects of the current study are first to decide whether an utterance is said with falling or rising tune, and, second to assign meaning to each utterance on the basis of their first decision taking into account the intonation-dependent meanings. Different speech types that operate in the language (e.g. statements, questions, commands, and exclamations) were examined. This investigation, by all means, is not an exhaustive treatment of the intonation patterns of the second language, it rather is a modest description of the perception and interpretation decisions which are made by second language learners. We attempt here to **provide** a hypothesis for a clear teaching goal of intonation and other suprasegmental units of the target language.

Methods

Subjects

A group of thirty Jordanian students of an English pronunciation class of a sophomore level in the English Department at Yarmouk University participated in this study, all right-handed with normal hearing according to self report. All subjects graduated from public schools and studied English in grades 5-12 in Jordan. Also none of them had been to an English speaking country at the time of the study. Moreover, all members of the group come from the same social and economic background and were born to Jordanian parents.

The listeners had passed two pronunciation courses at the time of the study. The first course which is a prerequisite to the second is based on Chapters 1-5 of **Better English Pronunciation** by O'Connor, 8th edition, 1987. This course aims primarily to give students instructions and training in English articulatory phonetics. The second course is designed to prepare students to be persuasive speakers and critical listeners. It is based on Chapters 6 (words in Company) and 7 (intonation) of the forementioned textbook. Moreover, the subjects passed the courses of language skills required top student's specialized in English language and literature with a point average of 75% and above. These courses are:

1. Communication Skills: A two sequence of courses designed to enhance student's skills in reading, listening comprehension, speaking and writing. This program is designed to help students internalize essential syntactic patterns of English.
2. Language Through Literature: A two semester sequence of courses intended primarily for potential English majors and designed to teach language through literature of all kinds. The courses contain a principle emphasis on reading and writing.

This background about the subjects' knowledge of the different aspects of English provides us with a clear picture about their training in the segmental (articulatory phonetics) and the suprasegmental elements of English phonetics. Thus it is quite clear that the only active training in these important aspects of the target language is through their study of the two pronunciation courses for 40 class hours each. This, however, does not exclude any passive exposure to these aspects of English pronunciation.

Experiment Stimuli

Test material was a set of twenty-one minimally paired sentences, differing in intonation tune only, or presenting the same intonation tune twice ('filler' pairs) to borrow a term from Cruzferreira (1984). The sentences are given in Table 1. These sentences are based on the exercises on chapter 7 of **Better English Pronunciation** (O'Connor, 1987) which the subjects had studied.

TABLE 1: TEST MATERIAL

You can't play?	ju ka: nt ple 1
You can't play?	
How's your sister?	h ʌv z jə(r) slstə(r)
How's your sister?	
What a nice day!	wɒt ə naɪs deɪ
What a nice day!	
Come and have tea with us.	kʌm ɒn hæv ti: wɪð (ə)s ʌs
Come and have tea with us.	
It was not a good film, was it?	ɪt wəz nt ə ɡʊd flɪm, wəz ɪt
It was not a good film, was it?	
Did Ahmad take that book?	dɪd ə ahməd teɪk ðæt bʊk
Did Ahmad take that book?	
He won't be late.	hi wəʊnt bi leɪt
He won't be late.	
You can't play.	ju ka: nt pleɪ
You can't play.	
He won't drive too fast.	hi wəʊnt draɪv tu: fa: st
He won't drive too fast.	
Why did he change his mind?	wəɪ dɪd ɪtʃeɪndʒ hɪz maɪnd
Why did he change his mind?	
How's your father?	h ʌv z jə(r) fa: ðər
How's your father?	
What a nice day!	wɒt ə naɪs deɪ
What a nice day!	
She's quite attractive, isn't she?	ʃi:z kwəɪt ətɹəktɪv ɪz ntʃi
She's quite attractive, isn't she?	
Why did you change your car?	wəɪ dɪd jʊtʃeɪndʒ jə(r) kɑ: r
Why did you change your car?	
He won't drive too fast.	hi wəʊnt draɪv tu: fa: st
He won't drive too fast.	
How's your brother?	h ʌv z jə(r) brʌðər
How's your brother?	
(I went to Amman last week) Did you?	ai wɛnt tʊ ʌmən lɑ: st wi:k

(I went to Amman last week) Did you?	al went tʊ ? ama:n la:st wi:k
You can't play?	ju ka:nt pleɪ
You can't play?	
Why did he change his mind?	wɔɪ dɪd i tʃeɪndʒ hɪz mɪnd
Why did he change his mind?	
He won't drive too fast.	hi wɒnt draɪv tu: fa:st
He won't drive too fast.	
He can pass?	hi kən pa:s
He can pass.	

Stimuli Generation

A native British English speaker who used to teach other sections of the two pronunciation classes in the Department of English at Yarmouk University in Jordan was asked to read the 21 pairs of sentences from cards at normal speaking tempo into a microphone positioned at 12." Her voice was recorded on an **Akai** tape recorder in a recording booth at the Language Laboratory of the Language Center. Fifteen seconds' interval was allowed after each pair, giving a playing time of 5 minutes 52 seconds. The experimenter monitored production of each sentence from outside the recording booth to ensure that sentences carried the proper intonation tune and that the subject did not introduce undue pauses or noticeable changes in the normal speaking tempo.

Stimuli Processing

The recorded stimuli were played to the listeners who heard the data at a comfortable listening level through head-phones while seated in listening booths in the language laboratory to which they were used. A response booklet was prepared for the 21 pairs of sentences. Subjects were asked to mark off their responses in the booklet deciding whether the two sentences in each pair have the 'same' or 'different' intonation tune and assigning meaning(s) of the provided glosses according to the previous judgement. The expected number of responses of pairs characterized as "same" is 420 whereas the number of those pairs characterized as different is 210. However, the number of expected responses of interpretation is 420 for each category. Moreover, judgement of utterances produced with a falling intonation amounted to 510 and with rising to 330.

Results

Perception

The task was to decide whether the test sentences in each pair have the 'same' or different meaning. Results of this task are presented in the confusion matrix in Table 2.

TABLE 2 PERCEPTION

	Same	Different	n
Same	272 (65%)	148 (35%)	420
Different	60 (28%)	150 (72%)	210

The misperceived tokens of the pairs characterized as the 'same' amounted to 148 tokens (35%) of the responses of the listeners whereas the 'different' pairs were misperceived 60 times (28%) of the judgements. A Chi-square test on the difference between the two categories has shown that the differences is insignificant ($\chi^2 = 2$, n.s.). This shows that the listeners' perception of the 'same' and 'different' pairs was of the same level.

Interpretation

The task here was to assign meaning on a closed-choise binary decision for the two meanings of the sentences in the pairs characterized as 'different' or one meaning of the two when the sentences in each pair have the 'same' meaning. Results of this task are given in the confusion martix in Table 3.

TABLE 3: INTERPRETATION

Correct Responses		Incorrect Responses		n
		Due to Faulty Perception	Due to Faulty Interpretation	
Same	212 (51%)	148 (35%)	60 (14%)	420
Different	232 (57%)	120 (28%)	62 (15%)	420

The subjects misassigned meaning 60 times (14%) for the single meaning pairs due to faulty interpretation and 148 times (35%) due to faulty perception. Overall, then, the listeners interpreted 51% of the pairs characterized as the 'same' correctly. This number seems to suggest that listeners' performance was due to chance more often than to correct perception of the meanings of English intonation patterns.

As for the pairs characterized as 'different' the listeners misinterpreted 62 tokens (15%) due to faulty interpretation and 120 tokens (28%) due to faulty perception. The total percentage of misinterpreted tokens of this category amounted to 43%. Basically, the listeners' performance here seems to be due to chance. The overall difference between the misinterpreted tokens of the 'same' and 'different' categories is insignificant ($\chi^2 = 2$, n.s.). This indicates that the failure of listeners to reach a significantly better than chance performance in assigning meaning to the stimuli is possibly due to their insensitivity to the intonation patterns of English.

Falling vs. Rising Tunes

Table 4 shows the number of misperceived tokens of each of the speech types examined in this study, with reference to the intended intonation tune.

Table 4: Interpretation of Each Speech Type

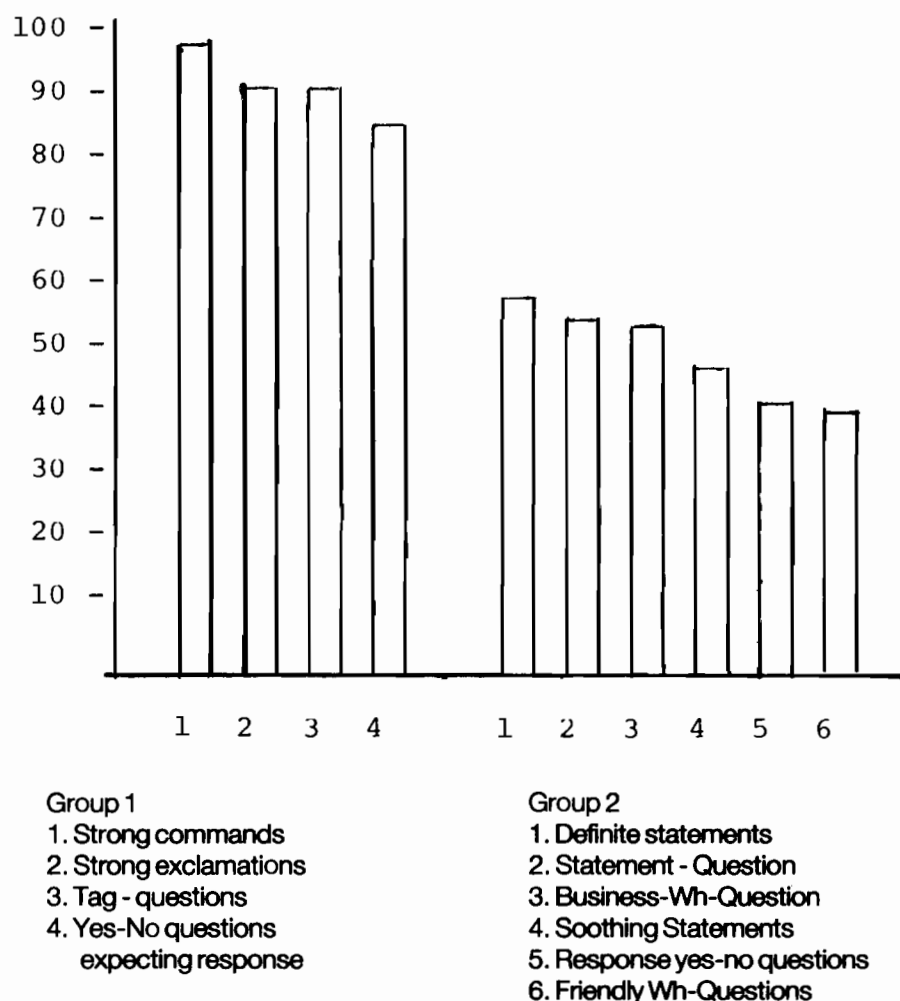
Speech Type	Meaning	Tune	N of Responses	N of Errors	Interpretation of Errors
Statement	Question	Rising	90	42	Complete Statement
Statement	Statement	Falling	180	78	Soothing
Statement	Soothing	Rising	90	49	Complete Statement
Wh - Q	Friendly	Rising	120	73	Business-like
Wh - Q	Business-like	Falling	150	71	Friendly
Exclamation	Strong	Falling	60	10	Unexpected
Strong Command	Strong	Falling	30	1	Request
Tag - Q	Forcing No-Response	Falling	30	2	Forcing Yes Response
Tag - Q	Forcing Yes-Response	Falling	30	4	Forcing No-Response
Yes - No Q	Expecting Response	Rising	30	3	Response
Yes - No Q	Response	Falling	30	18	Expecting Response

Overall, speech types produced with a falling tune (i.e. strong commands, strong exclamations, tag questions, yes-no questions as a response, business-like Wh-question, and complete and definite statements) were misperceived as rising tune 36% (184 times out of 510 tokens). The correct responses of 64% is marginally above chance performance. The speech types produced with a rising tune (i.e. yes-no question forcing a response, friendly Wh-question, soothing statement, and statement as question) were misperceived as having a falling tune 50% (167 times out of 330 tokens). The correct response of 50% is only due to chance performance. The confusion difference of 13% between the two tunes is insignificant according to Chi-square test ($\chi^2 = 0.7$, n.s.).

However, responses of listeners differ from one speech type to another. As can be seen in Table 4 above and Figure 1.

the responses divide the data into two groups of speech types; group one consists of strong commands, strong exclamation, tag-questions and yes-no questions demanding response whereas group two consists of all types of statements, wh-questions and yes-no questions expecting no response. Subjects of the current study misinterpreted only 10% of the tokens of the first group and about 52% of the second group. The difference between the two groups of speech types has reached a significant level by t-test ($p > .001$).

Figure 1: Percentages of correct interpretation of different speech types



Discussion

Perception

We recall that the layout of this experimental study was intended in part to arrive at conclusions regarding the non-native ability to perceive the difference between falling and rising tunes. Findings of the current study reveal that our Jordanian listeners showed a clear hesitation in making a clear cut distinction between the falling and rising English intonation tunes. This can be revealed from the high percentage of misperception of the 'same' and 'different' pairs of tokens. The confusion of these two intonation

tunes could be attributed in part to the insensitivity of the subjects of our study to the difference between the fall and the rise in the frequency of the vocal fold vibration (i.e. pitch variation which is associated with falling and rising tunes). Also, the segmental training that our subjects received prior to the short-term passive exposure to English intonation patterns and other suprasegmental aspects of English phonetics might have affected their decisions here. The listeners might have attempted to listen closely to the segmental units more often. Therefore, their perceptual judgements corresponded to phonemes and their sequences rather than to intonation components such as pitch variations.

Interpretation

We also recall that the current study intended to investigate the second language learners' ability to associate intonation patterns with semantic interpretation. Findings of this study revealed that our Jordanian subjects showed a clear hesitation in assigning meanings to the two English intonation tunes tested here. This hesitation can be gathered from the high percentage of misinterpretations of a number of the speech types. The listeners' decisions seemed to have been affected by three major factors: faulty perception of tunes, faulty interpretation of correctly perceived tokens and simplicity or complexity of the lexicosyntactic cues.

1. Faulty Perception

We have already shown that listeners in the current study failed to significantly perceive the difference between the two English intonation tunes examined here. This failure has affected the listeners' performance in the second task of this study. They actually misinterpreted a high percentage of the intonation-dependent speech types as a result of their confusion of falling with rising tunes. This would lead to the conclusion that our subjects' ability to perform this task is limited to chance more often than to conscious knowledge of English perceptual difference between falling and rising tunes.

2. Faulty Interpretation

Findings of this study have also revealed that subjects failed to give the right meanings for a good number of the correctly perceived tokens. This failure is a clear indication that our listeners' conscious knowledge of the shades of meanings of English intonation tunes is weak. This weakness seems to stem from the listeners' unawareness of the alternative interpretations of certain lexical items or syntactic structures which are intonation-dependent. It is to be recalled also that our subjects showed a clear insensitivity to the pitch variation difference between falling and rising tunes.

Thus this failure would suggest that English pronunciation curriculum must be modified to enhance students' ability to acquire suprasegmental aspects of English phonetics such as intonation and related issues. Such modification, it seems, should take into consideration the introduction of suprasegmental components of language even prior to the introduction of segmental and grammatical knowledge of the second

language. Otherwise, students will hypercorrect their responses to conform to their conscious knowledge of segmental units, word order and straightforward meaning of a given syntactic structure. This strategy seems to have been employed by Jordanian listeners in the present study even when they could, by chance, perceive the difference between a fall and a rise of about half of the tokens as we will see in the following section.

3. Simplicity or Complexity of Cues

We have already shown that the subjects have failed to **significantly** perceive the difference between falling and rising tunes and give the right interpretation of most of the correctly perceived tokens. This failure provides evidence that our listeners were not aware of intonational difference of tunes and consequently were insensitive to the intonational-dependent interpretation(s) of different speech types. Yet, we realized that they significantly succeeded in giving the right meanings of most of the tokens of strong commands, strong exclamations, tag-questions and yes-no questions forcing a response and failed in assigning meanings to almost half of the tokens of the three types of statements, wh-questions and the response-yes-no questions. This division seems to have been based on the degree of simplicity or complexity of the lexico-syntactic of semantic cues as we will see in the following two sub-sections.

A.. Simple Speech Types

The apparent success of our subjects in giving the right interpretation to commands, exclamations, tag-questions and yes-no questions demanding response seems to argue for the possible lexicosyntactic and semantic strategies that they might have followed in the absence of their sensitivity to English intonational difference between falling and rising tunes. This strategy stems from the fact that certain lexical or syntactic patterns of the target language are most commonly associated with one particular semantic interpretation which is usually taught to second language learners independent of the attitudinal meaning of intonation (Cruz-Ferreira, 1984:567). Thus, the straightforward interpretation of the four forementioned speech types which is suggested by the words or their sequence seems to override alternative meanings which are intonation-dependent. Our listeners then might have listened to the meaning(s) of individual words or the overall syntactic structure (i.e. word order) of these speech types rather than to the meaning(s) of the utterance exemplified by its intonation pattern. This straight-forward inherent function seems to suggest a simple speech type that could be easily acquired by non-native speakers in the absence of their awareness of intonation level difference between one tune and another.

Based on this analysis, we can justify the success of our subjects in scoring high in their responses to the stimuli of the four speech types, namely commands, exclamations, tag-questions, and yes-no questions demanding response.

A.1. Commands

Since second language learners of English are usually taught to associate the absence of a subject from the surface structure of sentence with commands, listeners in the current study made use of this straightforward function in responding significantly to sentences such as

|| Come and have tea with us. ||

A.2. Exclamations

Also, the significant performance of subjects in giving the right interpretation to exclamations seems to be based on using the straightforward function associated with this speech type. Subjects seem to have heavily relied on the use of the expression "a nice day" in an utterance as

|| What a nice day. ||

Syntactically speaking the absence of the verb from the utterance also adds to the possibility of using lexico-syntactic **strategy** in assigning the interpretation for almost all exclamation tokens which were prepared for the purpose of the present study. This is because the absence of the verb is associated with exclamations especially when certain expressions are used.

A.3. Tag-Questions

Moreover, the use of the negative particle "not" in the statement part of the tag-question is usually taught to second language learners of English as a cue to a no-response tag-question as in the sentence

|| It was not a good film, was it? ||

The straightforward function of this question is to give the impression that the film was not good and to convince the listener to agree by saying "No, it was not". However, the use of the negative particle "not" in the tag itself such as in

|| She's quite attractive, isn't she? ||

demands a yes-response. That is, the speaker tends to give the impression that the subject is attractive and intends to elicit the listener's agreement. Therefore, he expects that the listener's answer is "yes, she is." Listeners of the present study seem to have used the position of the negative particle "not" in the statement or the tag as a syntactic cue in their interpretation of the two types of tag-questions.

A.4. Yes-No Questions Demanding Response

The inherent function of yes-no questions is usually associated with the meaning 'expecting response.' This straightforward implication is usually taught to learners of English as a second language. Thus, the yes-no question:

|| Did Ahmed take the book? ||

was fully and rightly interpreted as a question that demands an answer. This implies that listeners of the current study have acquired this type of yes-no questions independent of its intonational tune and made use of its inherent function in performing the interpretation task of this study.

B. Complex Speech Types

Our subjects' failure to significantly interpret the three types of statements, wh-questions and response yes-no questions could be attributed to their alternative interpretations which are intonation-dependent. It is to be recalled that listeners of the present study misinterpreted 50% or more of each of these speech types. We also recall that listeners failed to show a significant sensitivity to the difference between falling and rising tunes. This would imply that they could not establish any strategy in assigning meanings to utterances which bear more than one interpretation. They were possibly guessing the meaning on the basis of their shaky awareness of intonational level differences. We recall that the listeners were exposed to intonation through 9-12 class hours during their enrollment in a pronunciation course at the sophomore level which is designed to introduce the suprasegmental concepts of English phonetics and phonology with very little practice. Thus the lack of solid understanding of the intonation-dependent interpretations at each of the forementioned speech types resulted in the lack of specific strategy in assigning meaning to the tokens of these complex speech types. Subjects' confusion of the intonation-dependent meanings of the speech types in question can be gathered from the following examples of the stimuli generated for the purpose of the current study.

B.1. Statements

English statements turn to be complex speech types for non-native listeners due to the dependence of their interpretation on intonation tunes. They can imply a definite and complete statements, soothing or encouraging ones or questions depending on the intonation type that native speakers use with the statement structure. Thus, due to this complexity, our subjects confused some of the definite statement tokens with soothing ones; they misinterpreted the definite statement produced with a falling tune:

|| He can pass. ||

as a soothing statement said with a rising tune:

|| He can¹ pass. ||

They also misinterpreted some of the soothing statement tokens such as

|| He won't be¹ late. ||

as a complete and definite statement.

|| He won't be¹ late. ||

Furthermore, the insensitivity of the subjects to the perceptual difference between falling and rising tunes and their uses with different speech types was clear in their interpretation of statements with the function of questions as complete and definite ones. For example, they failed to significantly interpret the statement-question tokens such as in

|| You cannot play? ||

Instead, they responded to this intonation-dependent utterance as if it were a definite and complete statement.

|| You cannot play. ||

B.2. Wh-questions

In the current study listeners' misinterpretation of about half of each of the business-like and friendly wh-questions seems to be due to the confusion which is created by the intonation-dependent meanings of these two types of wh-questions. Business-like question is produced with a falling tune whereas friendly wh-question is uttered with a rising tune. The difficulty of our subjects in making a clear cut distinction between a fall and a rise in pitch is reflected in their assignment of meaning to speech types which convey meanings on the basis of changing the intonation tune rather than on changing word order or using certain lexical items. Thus, our listeners misinterpreted half of the tokens of business-like wh-questions said with a falling tune such as in

|| 'Why did he 'change his' mind? ||

as a friendly wh-question produced with a rising tune

|| 'Why did he 'change his' mind? ||

The other way around was true; listeners misinterpreted more than half of the tokens of the friendly wh-questions produced with a rising tune as in the utterance:

|| 'Why did you 'change your ' car? ||

as a business-like wh-question said with a falling tune:

|| 'Why did you 'change your' car? ||

B.3. Yes-No Questions

English yes-no questions are usually taught to second language learners as demanding a response. We recall that listeners in this study did not have difficulty in giving this meaning to almost all tokens of this type of yes-no question independent of its tune. This straightforward interpretation was also carried out by the listeners in assigning meaning to an unfamiliar English yes-no question whose meaning is intonation dependent. This type is uttered to imply a response itself. Our subjects, therefore, interpreted about 60% of the tokens of this type of yes-no question as if they expected responses. For example, listeners misinterpreted the response yes-no question in the following speech situation:

A: (I went to Amman last week).

B: || Did you? || (This question does not demand response).

as a yes-no question that demands response as follows:

A: (I went to Amman last week).

B: || Did you? || (This question demands response).

A: yes, I did.

Listeners here seem to have hypercorrected their responses to conform to their conscious knowledge (Tarone, 1972) of the straightforward interpretation of yes-no question that demands response.

One may deduce from the high percentage of confusion of the subjects while performing the different tasks of the present study that the Jordanian listeners would seem to be insensitive to the English intonation patterns. This suggests that syntactical and semantic cues were used more often in the subjects' decisions.

Over the past two decades the considerable amount of research into first language acquisition has given rise to several approaches to the problem of second language acquisition. One of these approaches suggests that the target language acquisition follows a process similar to that of the native tongue (Krashen, Scarcella and Long, 1982). Thus since second language learners are influenced by the emphasis of intonational sensitivity in the early stages of their acquisition of their native language, Richards (1971), D. Anglejan and Tucken (1975) and Berkovits (1980) claim that non-native speakers usually pay more attention to intonational cues than do native speakers. Yet, results of the current study do not provide data to support this claim. Rather, our listeners have shown a clear hesitation to use intonational cues in assigning meaning to the different stimuli presented to them in this investigation. This is in agreement with the

contention of Hornby (1973) that intonation is a less important cue after the age of fifteen.

Our findings are also in agreement with Tarone (1972) that second language learners' 'conscious knowledge' interferes in their speech perception behaviors. Such knowledge is often limited to the segmental, discrete and sequential language units (i.e. the word, the morpheme, or the phoneme). Due to this limitation, second language learners seem to be 'linguistically insecure', to borrow a term from Labov (1966). That is, when they move into unfamiliar and stressful speaking situations, their linguistic decisions often correspond to phonemes and distinctive features (Kozhevnikov and Chistovich, 1965, p. 215) rather than to the articulatory syllable. Non-native speakers attempt to hypercorrect their speech behavior to make it conform more closely to the segmental units which they 'know' are correct (Tarone, 1972). However, research in experimental phonetics has provided evidence that the units we usually use in actually producing and perceiving the speech signal cannot be segmental, discrete, and sequential. For example, researchers such as Cooper (1960) and Kozhevnikov and Chistovich (1965) suggest that the perception and production of speech may correspond to the syllable as it occurs in rhythmic groups. Other researchers have arrived at similar conclusions as to the importance of the syllable in speech behaviors. Laver (1970), p. 71) suggests that:

.... the brain obviously transmits different neural commands for a phoneme occurring in initial as opposed to final syllable position, and one hypothesis which could explain this is that the syllable constitutes the basic neural unit.

The importance of the syllabic patterning in the second language suggests that rhythms, syllabic patterning and intonation of the target language are better be introduced to students before any interference from the segmental, discrete and sequential units can occur (Tarone, 1972).

The failure of non-native speakers to use the unfamiliar suprasegmental speech signals is supported by Mitleb (1986). He found that his Jordanian listeners did not succeed in identifying the English weak-form words from their strong counterparts. Mitleb (1986) attributes their failure to the possible interference of the non-native speakers' conscious knowledge of the discrete sequential units of the target language. Discussion of the findings of the current study also suggests that the Jordanian listeners' decisions were possibly made on the basis of the lexicosyntactic rules they had acquired in an earlier stage of the process of second language acquisition.

Conclusion

The results of this experimental study have shown some interesting insights into second language learners' perception and interpretation of English intonation contours. Our listeners' clear insensitivity to English intonation patterns may be explained by their reliance on their conscious knowledge of the lexico-syntactic and segmental rules of the second language rather than on intonational cues. This reliance stems from

the fact that suprasegmental aspects of the second language are taught at a stage where the learner has already imprinted on the brain the discrete segmental units of the target language against which he checks his performance in suprasegmental situations. This insensitivity will continue as long as the teaching of English suprasegmentals remains the most neglected aspect in the second-language classroom. (Hart, 1987). It is, therefore, reasonable to conclude that the greater exposure to and training in English intonation and other suprasegmentals would help non-native speakers develop an awareness of intonational cues. Thus, due to the importance of the suprasegmental aspects of any given language in language communication, it seems central to introduce the rhythmic structure, syllabic structure, stress rules, speech timing and intonation patterns to second language learners at an early stage of the process of second language teaching.

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