

PSYCHOACOUSTIC ANALYSIS OF INTONATION  
AS A CARRIER OF EMOTION IN  
ARABIC AND ENGLISH

A DISSERTATION

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## ABSTRACT

This is a psychoacoustic study investigating experimentally the role of intonation as indicative of the human phenomenon of emotion in both Arabic and English. It studies both the acoustic properties of emotion in speech and their impact on intonational contours.

Utterances representing five emotions (anger, fear, happiness, sadness, and neutral) in both the declarative and interrogative modes were collected from the speech of eight professional actors (4 Arabic, and 4 English) as they performed roles in movies and drama series. Two types of judges were used: viewers and listeners. The former watched the clips carrying the utterances and identified their emotional content. Their responses determined which utterances were included in the acoustic analysis. The listeners listened only to the utterances chosen by the viewers, and their responses were used to determine the acoustic clues for emotions. The acoustic analysis involved measuring the parameters of fundamental frequency ( $F_0$ ), intensity, and duration of four units of analysis: utterance as a whole unit, the initial and the final syllables of the utterance, and the syllable with the highest  $F_0$  value (the peak). The ANOVA statistical test was run on the acoustic data. The listeners' responses were used in the Kappa test to determine their emotion recognition accuracy.

The results showed that no single parameter can be taken as the sole marker or clue to a certain emotion. Rather, the expression of emotion is viewed as a complicated process involving the three parameters