Exploring Prosodic Pragmatics at Affective Level

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Abstract

This research work presents a conceptual framework to explore the interplay between intonation and emotional expressions that conveys pragmatic meaning of linguistic utterances. Theory of Affective Pragmatics (TAP), an innovative theory that functions parallel to speech act theory, is applied to introduce a conceptual framework to study prosodic pragmatics at a profound level. The affective component of attitude is introduced in the framework using Ostrom's ABC model to comprehend affective pragmatics. For further study on this framework, quantitative research design is desirable to analyze data and the data is suggested to be obtained through emotional recordings from emotional prosody speech and transcripts (EPST). Praat as an apt tool recommended for the prosodic analysis of the data. This framework explains how intonation patterns signal unabridged emotions and feelings to understand speaker's implied meaning. It elaborates the emotional expressions that convey

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pragmatic meaning to intellectualize affective pragmatics. It highlights some other facets that render affective pragmatics a new-fangled field of research. It has also been envisioned to broaden the scope of prosodic pragmatics as a distinctive research domain in linguistics. The framework is an application of TAP and provides grounds to researchers to understand prosodic pragmatics at a deeper level and to perform future researches in more effective ways. The research is unique in its essence as it offers a conceptual framework to explore affective component of attitude in prosodic pragmatics that has not yet been explored.

Keywords: Prosody, Theory of Affective Pragmatics, ABC Model, Intonation, Emotional Expressions

1. Introduction

Former work on intonation was didactic in nature and intonation was seldom taught systematically. This created a gap between the intonation as it was understood in teaching and the intonation as it was employed in research. Although intonation has been considered a tough area, however, the recent experimental studies have made it more systematic and theoretically more rigorous (Grice & Baumann, 2007).

The human communication accompanied by non-verbal signals is truly multidimensional, therefore, an implied meaning can be inferred through non-verbal expressions, i.e., emotional expressions(Wu et al., 2021). Prosody deals with stress, rhythm, and intonation, which are deemed the larger units of speech and are recognized as suprasegmentals(Prieto & Roseano, 2018). It also reflects the affective state of the speaker while communicating. Primarily, it is essential to differentiate between the auditory measures(subjective impressions) and the acoustic measures(objective impressions) to understand the prosodic features. In auditory terms, voice pitch, length of sound,

loudness(prominence), and timbre are the key prosodic variables. In comparison, fundamental frequency, duration, intensity, and spectral qualities are the main variables in acoustic terms. These prosodic variables are behaviorally analyzed in the form of contours and boundaries(Lai & Gooden, 2016).Considering the contextual information, the prosodic variables also signify attitudes (S. Mozziconacci, 2002).

In linguistics, pragmatics is the study of utterances beyond their literal meanings and the ability to fathom speaker's implied meaning is referred as pragmatic competence (Domaneschi & Bambini, 2020). The prosodic features are the fundamental variables which convey pragmatic meaning of utterances (Pronina, Hübscher, Vilà-Giménez, & Prieto, 2021). Prosodic pragmatics is a connection between prosodic features and contextual information that identifies the speaker' intents beyond utterances(Wichmann, Dehé, & Barth-Weingarten, 2009). Utterancesare accompanied by certain emotional expressions that carry their own natural meanings and have potential to make communicative moves. The actual meanings of utterances become vague when secluded from the contextual information (Scarantino, 2017b).

English intonation is often said to be based on three aspects known as tonality (the division of the continuous speech into units), tonocity (the highlighting of particular words and syllables), and tone (the choice of pitch movement)(Paunovic, 2020). Intonation, a distinct phenomenon from tone, is the variation of pitch that indicates speaker's attitudes to signal the illocutionary acts latent in the utterances(Cresti, 2018; Goodhue, Wehbe, Hacquard, & Lidz, 2021). In the English language, there are seven intonation patterns: rising, falling, rising-falling, falling-rising, flat, high, and low, however, the following four intonation patterns are observed as the most significant among other:

- Rising Intonation meansthe pitch of the voice rises over time.
- Falling Intonation means the pitch falls with time.

- Peaking or Rise-fall intonation meansthe pitch rises and then falls.
- Dipping or Fall-rise Intonation means the pitch falls and then rises.

Global rising and falling intonations are represented by a diagonal arrow, i.e., rising left-to-right [↗] and falling left-to-right [↘]. These may be written as part of a syllable, or separated by a space when they have a broader scope: For instance, “he found it on the street [hiː ˈfaʊndɪt | ɒnðə↗ˈˈstɹiːt ‖]?”Here, the rising pitch on ‘street’ indicates the emphasis on the question that “where did he found it”, not “whether he found it”. The answer is“yes, he found it on the street.[↘ˈjɛs ‖ hi ˈfaʊndɪt | ɒnðə↘ˈstɹiːt ‖]”. So, with wh-questions, the rising intonation centering the question word is common while at the end of a question, the falling intonation is usually used (Betti, 2021). Different parameters of speech that contribute to intonation in a broader sense are given in the following table(Grice & Baumann, 2007).

Table 1-1 **Fundamental Measures of Speech Contributing to Intonation**

Auditory Measures (Perception level)	**Articulatory Measures (Production level)**	**Acoustic Measures (Transmission level)**	**Correlation of Auditory and Acoustic Measures**
Pitch perceived scale: high – low	Quasi-periodic vibrations of vocal folds	Fundamental frequency (F0) Measure: Hertz (Hz)	Pitch ↑ : Frequency ↑ and vice versa
Loudness/Prominence perceived scale: Loud – soft	Articulatory effort, subglottal air pressure	Intensity Measure: decibel (db)	Loudness ↑ : Amplitude ↑ : Intensity ↑ and vice versa
Length perceived scale: Long – short	Duration and phasing of speech gestures	Duration of segments Measure: millisecond (ms)	Length ↑ : Duration ↑ and vice versa
Timbre (Vowel quality) perceived scale: full – reduced	Vocal tract configuration, articulatory precision	Spectral quality Measure: Formant values in Hertz (Hz)	Timbre ↑ : Relative strength of musical notes ↑ and vice versa

To analyze the attitudinal function of intonation, it is primarily central to understand what the attitude is? Ostrom, in 1969, proposed ABC model of attitudes from the realm of social psychology. In this model, attitude is divided into its three basic components:

affective(A), behavioral (B), and cognititive (C) components(Chi, Jeng, Acker, & Bowler, 2018). ABC model is one of the most widely used models of attitude, in which the affective component indicates speaker's emotions and feelings, the behavioral component signifies speaker's intentions, and the cognitive component denotes speaker's beliefs towards an attitude object (Jain, 2014).

Table 1-2 **Components of Attitude in ABC Model of Attitudes**

Component	Measured by	Example
Affective (Neural)	Physiological indicators (verbal statements about emotions/ feelings)	I don't like my boss
Behavioral (Readiness)	Observed behavior (verbal statements about intentions)	I want to transfer to another department
Cognitive (Mental)	Attitude scales (verbal statements about beliefs)	I believe my boss play favorites

Intonation primarily serves an emotive function. The employment of pitch variations implies paralinguistic meaning in spoken English. In Bolinger's view, intonation is a gestural complex and is relatively a self-directed system of effects of attitudes that are supported by representational associations of ups and downs (Grice & Baumann, 2007).

Speech cannot be restricted to the linguistic content as itsignals the attitudes and emotions of speaker. The prosodic features modify the meaning of speech adding extra or contextual information to the linguistic content. In speech, the attitudes and emotions are expressed as prosodic cues such as pith level and range, speech rate, etc. the representation of emotional expressions through intonation patterns is given in the following table(Sylvia JL Mozziconacci & Hermes, 1997; Sylvie JL Mozziconacci & Hermes, 1999; Rodero, 2011).

Table 1-3 **Representation of Emotions/Feelings through Intonation Patterns**

Intonation Pattern	Emotional Expressions (EE)
Rising	happiness, elation, surprise, interest, excitement, hot anger, etc.
Falling	sadness, boredom, disappointment, panic, anxiety, shame, disgust, and contempt, disinterest, etc.
(Fall-) Rise-Fall	strong approval, strong disapproval, cold anger, enthusiasm, pride, fear, sympathy, etc.
(Rise-) Fall-Rise	disagreement, disbelief, uncertainty, etc.

Andrea Scarantino proposed an innovative theory in 2017 known as the theory of affective pragmatics (TAP) to study emotional expressions systematically. He introduced a taxonomy of communicative moves analogous to illocutionary acts presented in speech act theory to understand affective pragmatics at a deeper level. In TAP, he highlighted that emotional expressions are not merely the expressions, these can do much more on deeper level. The main objective of TAP is to initiate experimental research on emotional expressions for better understanding of non-verbal communication (Scarantino, 2017a).

Now, to deal with the language and meaning of emotional expressions, first we need to identify emotions through intonation patterns and then we apply TAP. This research work focuses the exploration of affective function of intonation to substantiate a bond between intonation and emotional expressions and to fathom prosodic pragmatics at a profound level.

2. Literature Review

TAP, a novel theory presented by Andrea Scarantino, appreciated by A. Fischer and D. Sauter for its integrative view point on emotional expressions. It bridges the gap between conflicting ideas and theories regarding voluntariness of emotional expressions(Fischer & Sauter, 2017).Scarantino elucidates that the topic of voluntariness is too intricate to formulize yet he holds the notion that emotional expressions can be characterized both as voluntary and

involuntary(Scarantino, 2017b). In TAP, Scarantino emphasizes that the emotional expression can do the same what the words can. He focused and preferred the naturalness of meanings obtained through emotional expressions over the non-naturalness of the meanings obtained merely through linguistic utterances. The basic philosophy of TAP is that one can involve in a multiple communicative moves same as one involves in a variety of illocutionary acts stated in speech act theory. For an intense research on communicative moves. there is aneed to explore TAP and extend it to other non-linguistic forms of communication, i.e., gestures, orientation, spatial positioning, etc.(Scarantino, 2017a).

Roach, in 2000, opined that intonation performs several functions such as attitudinal function, grammatical function, accentual function, and discourse function; however, the main function it serves among others is the attitudinal function. One can envisage a mental sketch of speaker's emotions and feelings such as joy, boredom, anxiety, sarcasm, neutrality, etc., through intonation patterns of utterances. The attitude can be deciphered considering the pitch ranges and voice quality. Additionally, facial expressions, gestures, and body movements also provide clues for the implied meaning(Madzlan & binti Mahmud, 2018).

There are three levels of representation of segmental and suprasgemental features in a speech synthesis process:a phonetic representation, a surface phonological representation, and an underlying phonological representation (Ali & Hirst, 2007). A number of models are employed to analyze the prosodic features of speech. The Tilt Intonation Model is a more powerful model than ToBI system as it facilities automatic analysis and synthesis of intonation (Taylor, 1998). The two common models to analyze intonation are the British school model and Auto segmental-metrical model. The British school model is based on pitch configurations such as rise, fall, rise-fall, fall-rise, etc. This model has didactic origins and is intuitively straightforward. The autosegmental metrical model is more accommodating for

the students and the knowledge of this model is indispensable for theoretical intonation researchers(Grice & Baumann, 2007).

3. Methodology/ Research Design

3.1 Theoretical Underpinnings

Speech act theory presents three distinct speech acts; locutionary acts, illocutionary acts, and perlocutionary acts. Likewise, TAP presents three different emotional acts; the emotional expressions, the communicative moves, and the communicative effects. Andrea Scarantino held emotional acts in TAP analogous to speech acts in speech act theory(Scarantino, 2017a). Scarantino further explicates that the communicative moves ($Declaratives_{EE}$, $Imperatives_{EE}$, $Commissives_{EE}$, $Expressives_{EE}$) in TAP function analogous to four illocutionary acts (Assertive, Directives, Commissives, Expressives)out of five in speech act theory(Scarantino, 2017b).

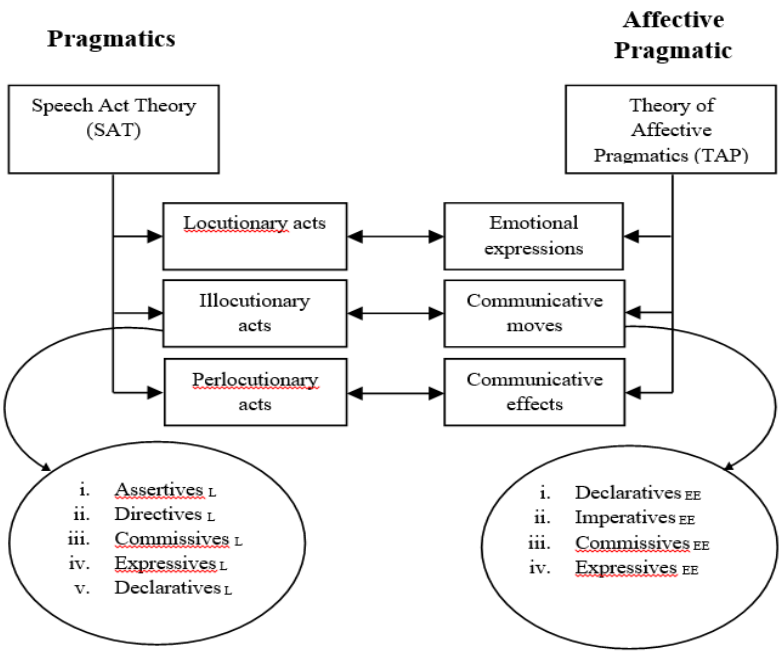

Figure 3-1 **Theoretical Framework of TAP**

There are three rudimentary features of illocutionary acts in speech act theory; illocutionary point, direction of fit, and sincerity condition. Analogously, the three basic features of communicative moves presented in TAP are emotional expression $_{EE}$, direction of fit, and communicative effect (Scarantino, 2017a).

Table 3-1 **Features of Communicative Moves**

Emotional Expression (EE)	Direction of Fit	Communicative Effect
Expressive $_{EE}$	Null	The recipient formation of the belief that the signaler is in a certain emotional state
Imperative $_{EE}$	world-to-mind	The recipient does what the signaler demands
Declarative $_{EE}$	mind-to-world	The recipient formation of the belief that the world is as signaler represents it to be
Commissive $_{EE}$	world-to-mind	The recipient comes to expect the behavior of the signaler commits to

ABC model of attitudesby Albert Ellis suggests three elements of attitude: affect, behavior, and cognition. An affect signifies the individual's feelings towards an attitude object(Jain, 2014).

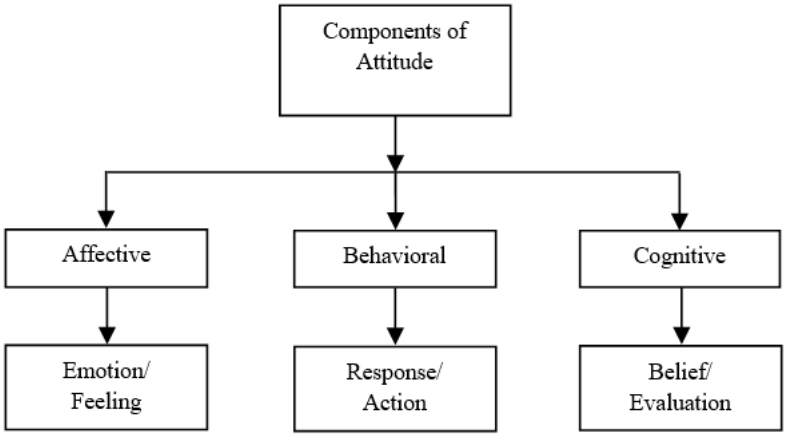

Figure 3-2 **ABC Model of Attitude**

The present study focuses the affective component of attitude.

3.2 Conceptual Framework

The conceptual framework based on the above theoretical grounds is presented in the following diagram. This framework is envisioned to explore the attitudinal function of intonation in prosodic pragmatics.

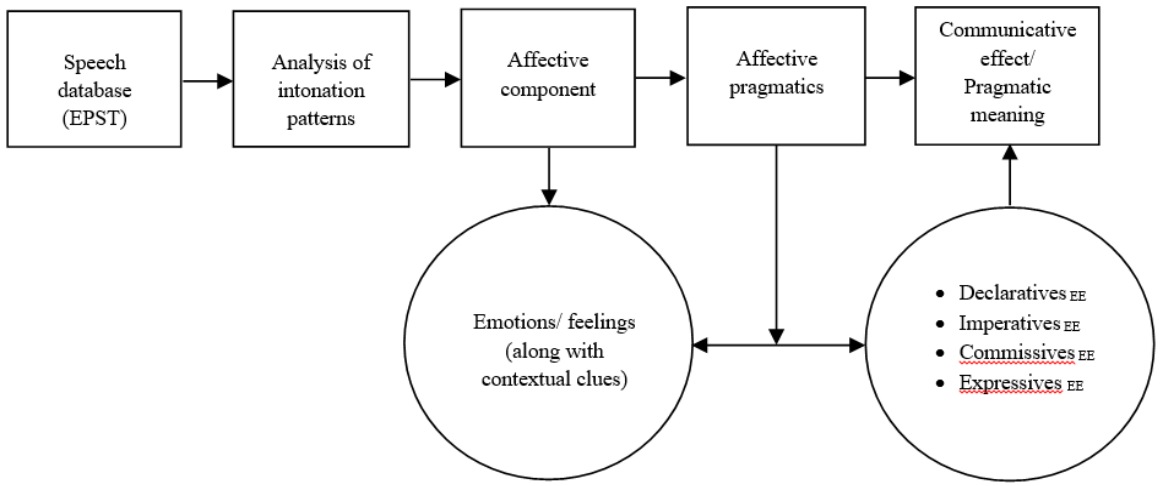

Figure 3-3 **Conceptual Framework of the Study**

Speech act theory investigates pragmatic meaning at utterance level but does not functions at emotional level. The above framework based on TAP is useful to explore the affective component of attitude.

3.3 Research Design and Data Analysis

Quantitative research design may be adopted to analyze data for further research on the proposed conceptual framework and the data may be procured from EPST (emotional prosody speech and transcripts) recordings. EPST is a worldwide database frequently used in emotion recognition processes. It contains fifteen sorts of emotions (hot anger, cold anger, anxiety, panic, despair, sadness, elation, happiness, interest, sympathy, boredom, shame, pride, disgust, and contempt)(Ververidis & Kotropoulos, 2012). Praat and Prosogram are the commonly used programs for the prosodic analysis of speech data. For quick and precise extraction of features such as frequency, pitch contours (highness of pitches), duration

(tempo), intensity (loudness) levels, speech sound waves, and spectrograms, Praat is a versatile software for signal analysis. ToBI (Tones and Break Indices) system may also be employed in combination with Praat. Prosogram is a tool used for the analysis of pitch variations in speech that simulates the auditory perception of pitch by the listener. Its key feature is the segmentation of speech into syllable-sized elements that result from spectral change (sound timbre) and intensity variation(Urbani, 2011; van Lieshout, 2003). For further study on the proposed conceptual framework, Praat is a preferred tool for the prosodic analysis of speech, and the data obtained may further be analyzed statistically for results interpretation.

4. Conclusion and Suggestion

TAP is a theory analogous to speech act theory which pursues pragmatic meaning at emotional level beyond utterance level. It expounds that emotions have their own language with natural meanings. The proposed framework represents the interplay between intonation and emotional expressions and offers a pathway to understand prosodic pragmatics at affective level. It is intended to broaden the horizons of prosodic pragmatics as an interdisciplinary field of linguistics. The significance of prosodic pragmatics is not effectively highlighted in the previous studies. So, there is a need to explore more in this domain. The framework is an application of TAP to explore the affective component of attitude that acts as a guide for the future researchers. Similar researches may be performed more efficiently and effectively following this framework to explore the knowledge of prosodic pragmatics.

Conflict of Interest: The corresponding author, on behalf of second author, confirms that there are no conflicts of interest to disclose.

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