

A Transdisciplinary Model for Prosody Applied to the Teaching of Clinical Populations

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ABSTRACT

This presentation describes the Prosodic Teaching Model which is an integrated approach to viewing the prosody of speech and language impaired persons. The Prosodic Teaching Model consists of two major divisions: prosodic features and prosodic components. The prosodic features include pitch, loudness, duration, and pause; the prosodic components comprise tempo, intonation, stress, and rhythm.

BACKGROUND

The purpose of this presentation is to explain the Prosodic Teaching Model, an organizational framework for teaching prosody and for using prosody to facilitate communication with speech, language, or hearing impaired persons. As an applied, transdisciplinary model, the Prosodic Teaching Model is derived from theoretical and research literature, from clinical experience, and from clinical research. The model is specifically concerned with teachability issues and attempts to account for both empirical and anecdotal information about the teaching of English prosody from a variety of fields including articulation, phonology, fluency disorders, neurogenetics, developmental delay, voice problems, child language impairment, hearing impairment, English as a second language, special education, learning disabilities, and music therapy.

In many instances, clinical approaches adopted for speech and/or language training in each of the aforementioned areas are fairly parochial and thus important information from other disciplines or disorders may be inadvertently overlooked. The use of an organized system that addresses this entire literature, such as the Prosodic Teaching Model, may improve clinical practice by assisting the clinician in identifying different aspects of prosody that should be treated and in ordering treatment objectives. The use of such a model to set priorities and to organize treatment is critical given the lack of empirical data regarding prosody in the clinical literature. Such an approach encourages more rigorous research and questioning of current pedagogical protocols.

DESCRIPTION

The Prosodic Teaching Model advocates a traditional division of prosody into two areas which may be particularly helpful in facilitating speech and language training: (1) prosodic features and (2) prosodic components. Prosodic features, which may be considered the building blocks for the prosodic components, include pitch, loudness, duration and pause. Combined, these prosodic features are implemented (realized as) the varying prosodic components of tempo, intonation, stress and rhythm. For the clinically impaired client to actualize the linguistic message, he or she must be able to perceive and to produce these prosodic features. A failure to marshal one or more features is a hallmark of many disordered

groups. Indeed, some might argue that the clustering of specific error types perceptually distinguishes one disordered group from another and may be diagnostically significant.

Prosodic Features

Prosodic features (pitch, loudness, duration, and pause) are building blocks of the prosodic components and have been described in terms of their perceptual and productive characteristics. Analyses of both normal and disordered speakers have considered prosodic features from descriptive, acoustic, and physiological perspectives. Linguistic models, especially of normal speakers, often take these features as a given. However, in work with disordered speakers, they must receive prime attention. The inability of many disordered speakers to perceive or to produce one or more of these features, may be paramount to failure to achieve prosodic components. A significant literature exists that details aspects of the prosodic features pitch, loudness, duration, and pause in a variety of disordered groups and therapeutic protocols specific to each group have been attempted.

Clients need not use an "idealized" pattern of prosodic features to produce a particular meaning. If control of "typical" prosodic features is beyond their capabilities, impaired speakers may use only one of the several prosodic features usually used to produce a particular prosodic component or they may develop compensatory patterns to produce the targeted prosodic component. Alternately, if clients have sufficient control of the prosodic features, clinicians may consider using them to improve other aspects of communication (e.g., increased duration may be used to improve fluency).

The four prosodic features are described briefly and their categories are listed below:

A. Pitch is the auditory perception primarily associated with the acoustic dimension of frequency. The categories of pitch are

1. Pitch height (average vocal pitch)
2. Pitch slope and declination (time element involved in increases or decreases in F_0 at the syllable, word, phrase, or sentence level. Declination refers to one type of decreasing pitch slope--the pitch slope from the onset of an utterance to the end of the utterance.)

3. Pitch direction (perception of pitch change)

4. Pitch variation (pitch range or pitch width)

B. Loudness is the auditory perception most often associated with the acoustic dimension of amplitude or intensity. The categories of loudness are

1. Loudness level (magnitude of the excursion from an arbitrary reference point)

2. Loudness variation (range of loudness levels)

C. Duration is the auditory perception associated with the acoustic dimension of time. The categories of duration include

1. Inherent duration (length modifications pertaining to speech sounds)
2. Prosodic duration (changes in length that are not related to differences among speech sounds but, nevertheless, having communicative value). Changes in prosodic duration are concerned with the production of tempo, intonation, stress, and rhythm.

D. Pause is the auditory perception primarily associated with silence. The categories of pause are

1. Intratum pauses (gaps in vocalization that occur within a single speaker's turn). There are two variations of intratum pauses: (a) lexical and (b) phrasal.
2. Intertum pauses (pauses that occur at the end of a speaker's turn)

Prosodic Components

Prosodic components are the elements that constitute prosody and include tempo, intonation, stress, and rhythm. The use of these components have linguistic significance. In the

Prosodic Teaching Model, clinicians must determine how a failure to achieve a prosodic feature may result in an error in a prosodic component and attempt to augment feature cues or provide clients with alternate strategies. Alternately, if clients possess sufficient control of their prosodic features, clinicians must determine if they express sufficient and appropriate meanings using prosodic components. If clients' prosodic components are sufficient and appropriate, clinicians may consider using prosodic components to facilitate other aspects of communication (e.g., changes in stress patterns may be used to promote intelligibility). Again, clinical resources address these prosodic components, but there is little cross referencing from one disorder to the next. The following briefly describes each of the four prosodic components.

A. Tempo involves use of timing elements, such as rate of speech, to impart meaning. The categories of tempo include

1. Speaking rate (number of syllables produced over a given amount of time). Rate changes are accomplished by (a) duration changes, (b) pause, and/or (c) phonemic changes.

2. Concordance (the movement from one element in an utterance to the next element). There are two factors that contribute to the quality of concordance: (a) insertion or elimination of pauses and (b) phonetic blending.

3. Phrasing (speaker's marking of the beginning or the ending of phrases)

B. Intonation is the communicative use of pitch. The categories of intonation are divided into two major subdivisions.

1. The internal organizational level of intonation:

- a. Onset (pitch height of the first full syllable in an utterance)
- b. Nucleus (most prominent syllable)
- c. Terminal contour (final pitch direction of the last syllables)
- d. Overall contour (holistic representation the pitch configuration from the initiation of the utterance to its end)

2. The external organizational level of intonation:

- a. Cohesive devices (stretches of identical or related intonation patterns that extend across utterance boundaries)
- b. Pitch Agreement (degree of concordance or agreement in pitch height between the end of one utterance and the beginning of the next).

C. Stress is the use of prominence for purposes of communication. The three stress categories include

1. Lexical stress (pattern of the stressed and unstressed syllables at the word level). Lexical stress occurs in (a) multisyllabic words, (b) weak/strong forms, and (c) stress shifting.

2. Phrasal stress (most prominent syllable in a phrase or sentence)

3. Emphatic stress (strong level of prominence)

D. Rhythm is concerned with the use of sequences of stresses and the flow of speech during communication. The categories of rhythm are

1. Stress sequences (stressed syllables at regularly perceived intervals)
2. Alterations (changes in tempo, intonation, and/or articulation)
3. Continuity (the ability to maintain an uninterrupted flow of speech)

SUMMARY

This presentation describes an integrated approach to organizing information about treating prosody (i.e., the Prosodic Teaching Model). The analysis of treatment objectives from a variety of disciplines, from the theoretical literature, and from clinical studies serves as the basis for the model which attempts to provide clinicians with a firmer grasp of the nature of communication problems and ways to facilitate appropriate treatment.

