Assessing how adults produce and understand the melody and rhythm of speech in English

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Introduction

Prosody is the melody and rhythm of speech which is vital in understanding language and diagnosing certain speech disorders ([1]).

Features

<table>
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<th>Definition</th>
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<td>Speech Melody</td>
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<td>Phrasing</td>
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<td>Rhythm</td>
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<td>Tempo</td>
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<td>Lexical Stress</td>
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<td>Affect</td>
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Strong need for a clinical tool to analyze prosodic features as it is a principal factor in determining a delay or disorder ([2]).

Few prosodic assessments exist:

- Prosody-Voice Screening Profile (PVSP)
- Prosody Profile (PROP)
- PEPS

Profiling Elements of Prosody in Speech-Communication (PEPS-C)

- Assesses 7 prosodic abilities
- Understanding & expression tasks
- Populations studied: children and adults who are typically developing and those with ASD, Williams syndrome, SLI, and other communication difficulties ([5], [6]).

Study Aims

- Aim 1: To examine the expressive and receptive prosodic abilities in adults when assessed by the PEPS-C.
  Hypothesis 1: PEPS-C will provide data concerning prosodic function and form and identify areas of difficulty.

- Aim 2: To explore the effectiveness of the PEPS-C assessment when administered to a neurotypical adult population.
  Hypothesis 2: While the test claims that adults should score within a typical range, I hypothesize that specific tasks may lack ecological validity and show scores that are lower than actual ability levels (e.g., lexical stress).

Methods

Participants

- No current speech/language deficits
- Native speakers of American English
- 18 + years of age
- Normal or corrected-to-normal vision/hearing
- 23 participants (22 f, 1 m)

Procedure

- Consent & demographic forms
- Audio recorded for reliability testing
- All expressive comparisons were significant except
- an
- Prosody acoustic software
- PEPS
- Results

Understanding

To examine the bull’s eye VS bullseye

Simple main effects for task & response:

Independent Variables: Task (lexical stress, boundary, etc.) and Response (expressive or receptive)

Dependent Variable: Proportion correct

Two-way repeated measures ANOVA:

- Significant task by response interaction \( F(3,66) = 6.632, p = .001 \)

Results

- Independent Variables: Task (lexical stress, boundary, etc.) and Response (expressive or receptive)
- Dependent Variable: Proportion correct

Analysis

- Automatically scored PEPS-C
- Audio recorded for reliability testing
- All expression tasks spliced and labeled in Praat acoustic software

Example Receptive Tasks

- bull’s eye
- bullseye, the center of a target

Example Expression Tasks

- Lexical Stress Task
- Contrastive Stress Task

PEPS-C Task Average Result

Discussion

- Importance of developing a prosodic assessment that best captures prosodic ability across domains.
- Results from an adult population indicate that one area of focus for future adaptation may be lexical stress receptive and expressive tasks as they were significantly different in comparison to the performances of the phrase, boundary, and contrastive stress tasks.
- Future Directions: Conduct acoustic analysis of expressive tasks.
- Limitations: COVID-19 impact on data collection; potential administrator bias.

Broader Impact:

- Improves our understanding of how the PEPS-C could be used as a diagnostic tool for adults and children.
- Improvement of prosodic assessments for future diagnosis of specific speech or language differences.

Acknowledgements & References

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