

### Introduction

- Speech language pathologists identify and treat voice disorders using perceptual voice ratings, including breathiness and roughness.
- These ratings are often inconsistent, even among trained listeners.
- Variability in perceptual ratings can make it difficult to track client progress and may weaken research reliability.
- Research suggests that structured training with anchor files and immediate feedback may improve perceptual accuracy (Chan & Yiu, 2002; Eadie & Kapsner Smith, 2011; Walden et al., 2022).

### Purpose

- To determine whether structured perceptual training improves accuracy in rating breathiness and roughness.
- To examine the effect of training on participant accuracy .

### Training Program

- Participants completed a structured voice quality rating training program for rating breathiness and roughness .
- Participants completed a pre test, six training modules, and a post test during one semester as part of a graduate course.
- Training included:
  - Repeated exposure to anchor files representing normal, mild, moderate, and severe levels
  - Immediate feedback following each rating
  - Progressive task difficulty across modules
  - Continuous access to anchor files during rating tasks
- The training was designed to support aligning internal standards with expert consensus ratings.

### Participants

Participant Group: 35 Graduate Students  
 Format: Distance Learning  
 Course: Vocal Disorders  
 Semester: Fall 2025

### Methods

- Voice samples from the Perceptual Voice Qualities Database (Walden, 2020).
  - All samples had expert consensus ratings.
  - Participants rated breathiness and roughness only.
  - Ratings were completed using a seven point equal appearing interval scale.
- Accuracy was defined as ratings within one point of expert consensus.
  - Pre test and post test scores were compared.
  - Matched pair t tests were conducted.
  - Hedges' g was calculated to determine effect size.

### Rating Scale



Figure 1. Seven point equal appearing interval scale used to rate breathiness and roughness from normal to severe.

### Breathy vs. Rough Voice

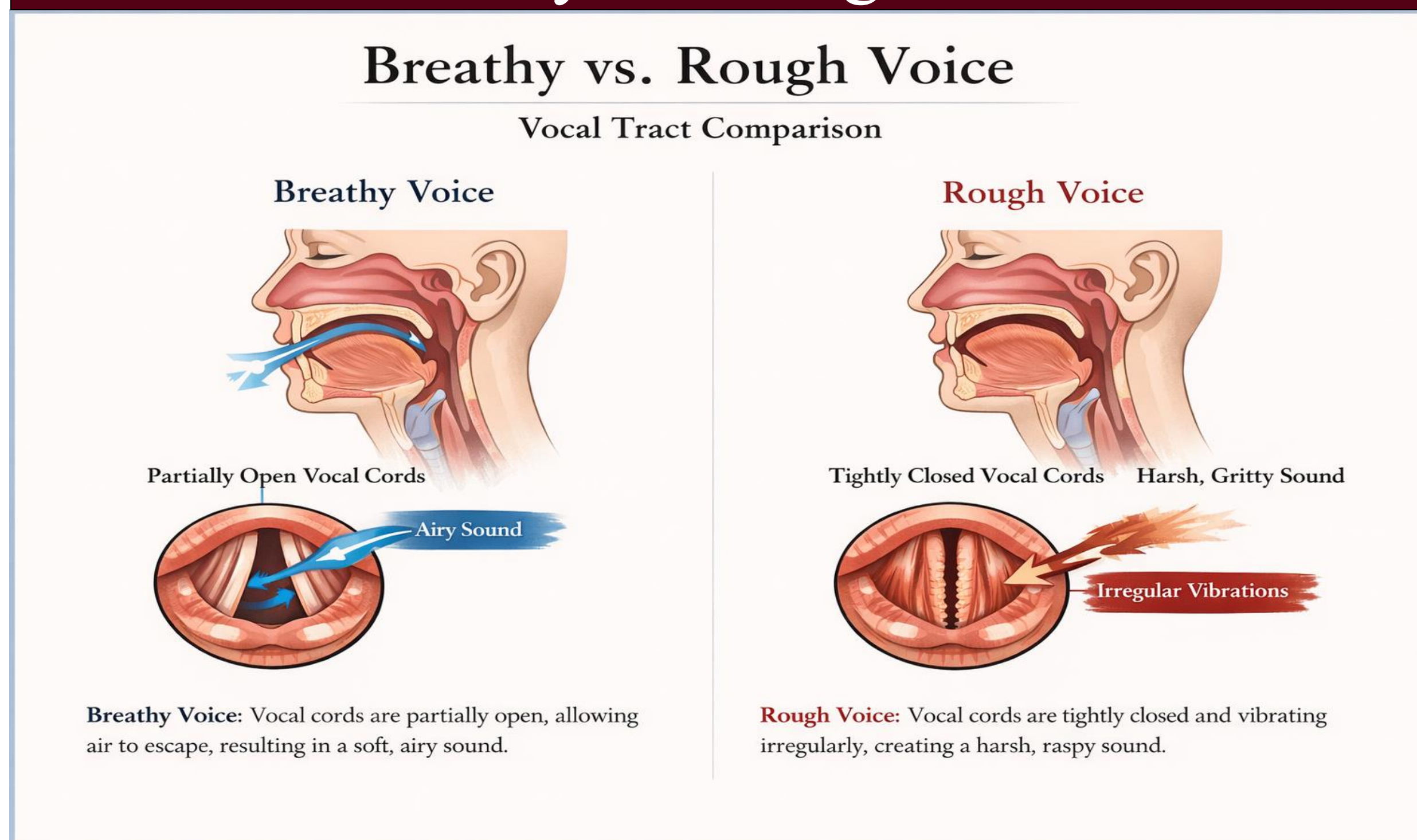


Figure 2. Physiological differences between breathy and rough voice quality. Breathy voice results from incomplete glottal closure, allowing continuous airflow leakage that produces an airy percept. Rough voice is associated with irregular vocal fold vibration, leading to aperiodic energy that is heard as noise.

### Rating Accuracy Before and After Training

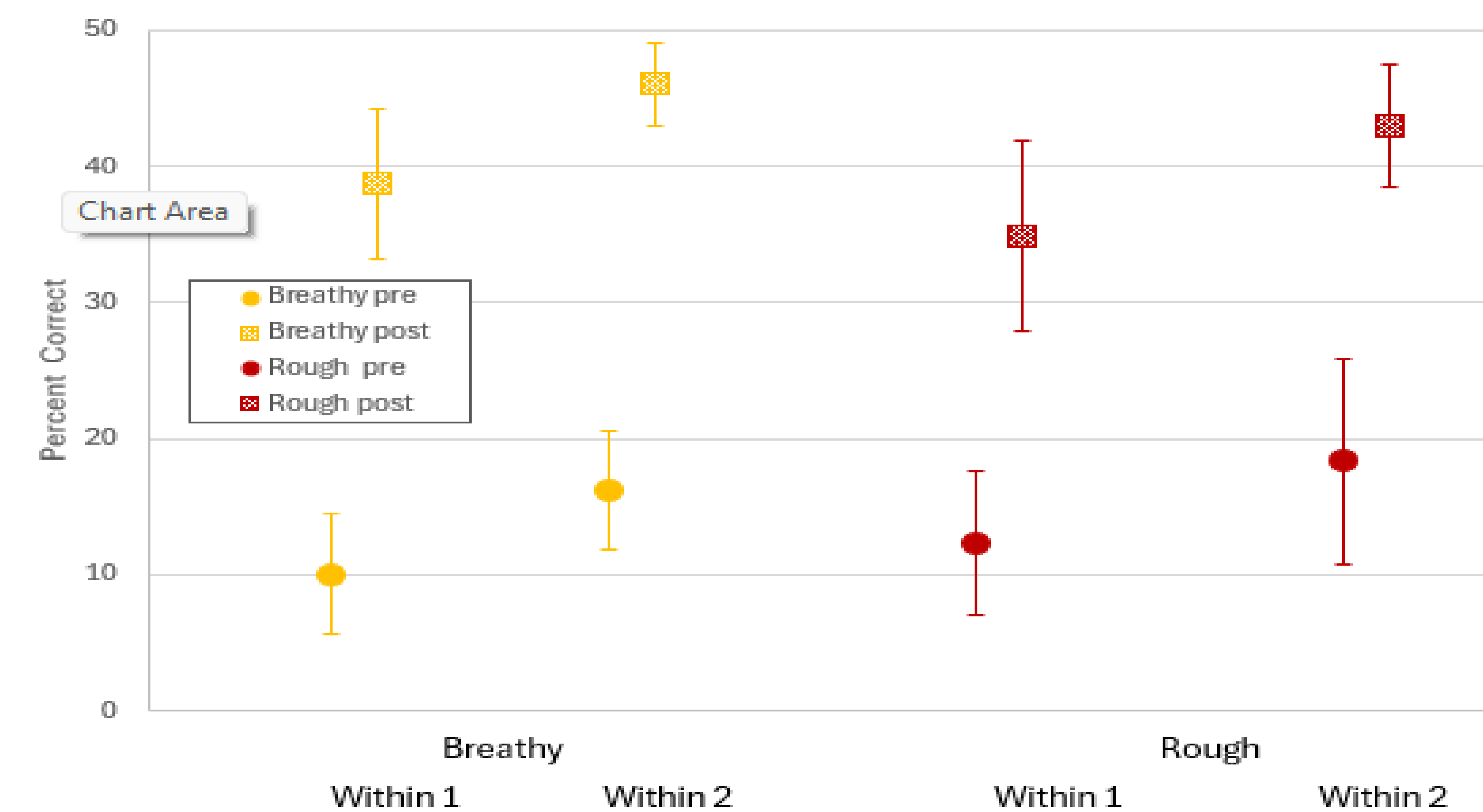


Figure 3. Mean percent of ratings within one point of expert consensus for breathiness and roughness on the pre test and post test. Error bars represent standard deviations. Participants demonstrated significant improvement in rating accuracy following completion of the training program.

- Breathiness improved from 10% to 38.7%,  $t(34) = 23.834, p < .0001, g = 1.63$ .
- Roughness improved from 12.3% to 34.9%,  $t(34) = 15.614, p < .0001, g = 1.23$ .

### Discussion

- Accuracy improved significantly for both breathiness and roughness.
- Large effect sizes indicate meaningful improvement.
- Repeated anchor exposure and immediate feedback likely reduced perceptual drift.
- Structured training supported alignment with expert consensus ratings.
- Findings support incorporating systematic perceptual training into graduate programs.

**Structured anchor-based training meaningfully improves perceptual accuracy in graduate student listeners.**

### Clinical Significance

- Inconsistent perceptual ratings weaken clinical documentation and research reliability.
- Structured training may improve inter rater reliability in graduate students.
- Ongoing recalibration may benefit practicing clinicians.