Listeners rapidly adapt to timbre
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Timbre: an introduction

Timbre = the tone color, or unique quality, of a sound, which cannot be attributed to pitch, intensity, duration, or location

Is timbre just a collection of independent, low-level features?

If timbre represents the holistic configuration of a sound, listeners should adapt to it, and this adaptation should generalize across changes in low-level features.

Design

In each trial, participants were repeatedly exposed to one of two adapters (see pairs below) and then judged the identity (“sound 1” or “sound 2”) of a sound morph between those two adapters.

Each adapter pair and their resulting morphs were equated in pitch, loudness, and duration, so only timbre distinguished them.

Results

Repeated exposure to one of the adapters (e.g., “sound 1”) alters the perception of morphs between sounds 1 and 2, making the morphs sound more like the other adapter.

Adaptation effects were robust and consistent across instrument and natural sound pairs.

Conclusions and Implications

Adapting to timbre biases our perception of a variety of natural sounds.

Adaptation is robust to low-level changes that occur in the natural environment.

Composers likely exploit this phenomenon to enhance listeners’ sensitivity to changes in musical texture, such as a new soloist in an orchestra or choir.

References


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