
This version is available at https://strathprints.strath.ac.uk/55169/

Strathprints is designed to allow users to access the research output of the University of Strathclyde. Unless otherwise explicitly stated on the manuscript, Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Please check the manuscript for details of any other licences that may have been applied. You may not engage in further distribution of the material for any profitmaking activities or any commercial gain. You may freely distribute both the url (https://strathprints.strath.ac.uk/) and the content of this paper for research or private study, educational, or not-for-profit purposes without prior permission or charge.

Any correspondence concerning this service should be sent to the Strathprints administrator: strathprints@strath.ac.uk
Auditory feedback important mechanism in speech production [1]
Research question:
To what extent are children able to compensate for and adapt to auditory feedback perturbation throughout their developmental trajectory?

Methodology
Participants
15 children: 8 female, 7 male; age range 4;1 - 8;7 y/m; mean 5;8 y/m.
37 adults: 32 female, 5 male; age range 19 - 29 years; mean 22.4 y.
Procedure
Stimuli: CV/CVC words [bear], /bear/ (footwear), /perv/ (pear).
Participants were seated in front of a PC-monitor showing pictures of the target words.
A bird flying over one of the pictures cued the participant to say the intended word.

Perturbation paradigm and analysis
Experimental setup
• Real-time acoustic tracking and shifting of F1 and F2 using Matlab based software package Audapter [5].
• F1 raised 25% F2 lowered 12.5%.

Results
Compensation and adaptation across groups
• Stronger effect of compensation for the group of children suggests auditory-motor properties are less ingrained compared to adult speakers.
• Presence of adaptation effects of F1 suggest ramp and stay phase lengths are adequate, even during the shorter program for children.
• Stronger/former adaptation in F1 for children suggests that adults revert faster to the ingrained original representation of the speech sound.
• Absence of adaptation in F2 for children is possibly due to a high within-group variance.

Discussion
Compensation and adaptation across groups
• Stronger effect of compensation for the group of children suggests auditory-motor properties are less ingrained compared to adult speakers.
• Presence of adaptation effects of F1 suggest ramp and stay phase lengths are adequate, even during the shorter program for children.
• Stronger/former adaptation in F1 for children suggests that adults revert faster to the ingrained original representation of the speech sound.
• Absence of adaptation in F2 for children is possibly due to a high within-group variance.

Effect of age
Is it possible to detect developmental changes with respect to compensation and/or adaptation?

References