

Abstract

Although speech perception can substantially improve with practice (perceptual learning) even in adults, it is not clear how differences in the training protocol contribute to this type of learning and particularly to the ability to generalize the gains attained in training to previously encountered items (tokens) and to different talkers. Here we compared the effects of four training protocols that differed in whether and how task difficulty was changed during a training session in which participants judged the semantic plausibility of sentences presented as time-compressed speech; in all other aspects the training experience was identical across conditions. In two conditions task difficulty (level of time-compression) was kept constant throughout the training session (constant-difficult, constant-easy) whereas in two other conditions task difficulty was changed in an adaptive manner (from easy to difficult, adaptive-incremental; or using a staircase procedure, adaptive-staircase). Feedback was afforded in all conditions. Compared to a control group (no training), all four protocols resulted in significant post-training gains in the ability to reproduce the sentences accurately, however, the constant-difficult protocol elicited the smallest gains. Overall, trained listeners reproduced familiar tokens presented by a new talker more accurately than untrained listeners; there was, in addition, a small advantage in reproducing novel items after training in the adaptive conditions compared to the constant difficulty conditions. The results suggest that protocols that afford an easy to difficult progression or constant easy task conditions might be advantageous for learning to decipher less familiar variations in speech; training in consistently difficult conditions is not.