Supplemental Material S1.

Analysis of Children Who Repeated Words During Perceptual Exposure

The experiment compares the relative contributions of perceptual learning and production practice to children's production accuracy for novel words. The expectation was that children were engaged in perceptual learning via the perceptual exposures of the test block (where the number of exposures was manipulated as part of the input frequency factor). However, fourteen children did not follow instructions and repeated the target items for 25% or more of the exposures. This leads to the concern that any effect of input frequency may reflect production practice. To address this concern, we removed those children who repeated the items during the exposures and reran the main ANOVA with just 51 participants who consistently listened to the exposures. In that analysis, we obtained the same three-way interaction of order, block, and input frequency, $F(2.55, 125.16) = 5.82$, $p = .002$, $\eta_p^2 = .11$. Looking just at the test blocks, there was a main effect of input frequency, $F(3, 147) = 9.75$, $p < .001$, $\eta_p^2 = .17$. Looking at just the baseline blocks, there was no main effect of input frequency, $F(2.55, 125.15) = .57$, $p = .608$. Thus, the main effects and interactions reported in the main analysis were again observed, indicating that the input frequency effect does reflect perceptual learning.

Analyses Related to the Inclusionary and Descriptive Measures

As reported in Table 1 of the study, there were unanticipated group differences in the descriptive measures. Here we address the potential that these group differences affected the reported results. Table S1 provides correlations between the measures reported in Table 1 and by-participant learning effects. Learning effects were calculated as difference scores. Production practice effects were the difference between the second block and first block. Perceptual learning effects were the difference between input frequency 3 and 1 during the test block.

Table S1. A summary of the correlations between by-participant learning effects and the inclusionary measure of articulatory skill (GFTA-2) and the descriptive measures from Table 1

	GFTA-2[†] (n = 65)	Auditory discrimination (n = 57)	Nonword Repetition (n = 51)	Name writing (n = 56)	Gross motor (n = 53)	Fine motor (n = 53)	SES (n = 60)
Production Practice Effect	–.191	.197	–.284*	–.145	–.168	.055	–.015
Perceptual Learning Effect	.027	–.097	.015	–.053	–.133	.135	.098

[†]Goldman-Fristoe Test of Articulation–Second Edition. *$p < .05$.

To account for familywise error, a Bonferroni correction was made, and α was set at .004. None of the correlations reached significance. Additionally, we ran an ANOVA in which age in months, auditory discrimination accuracy, nonword repetition accuracy, and SES were added as covariates. A Greenhouse-Geisser correction was applied given a significant sphericity violation. The three-way interaction between order, block, and input frequency was significant, $F(2.40, 88.66) = 3.36$, $p = .031$. In combination, these results suggest that group differences should not change how the main analysis of the experiment is interpreted.

Reference

Goldman, R., & Fristoe, M. (2000). *Goldman-Fristoe Test of Articulation–Second Edition*. Pearson. https://doi.org/10.1037/t15098-000