

Supplemental Material S1. Age of acquisition in production consonants.

According to Smit et al. (1990), 75% or more of children produce these sounds acceptably at the following ages (combined across initial and final positions). Children age 3 years 0 months (3;0) were the youngest tested.

Sound	Age produced (F)	Age produced (M)	More information
b,p,d,t	3;0	3;0	
s	3;0	5;0	(reversals noted)
z	5;0	6;0	
f	3;0	3;6	
v	4;0	4;6	

Fricatives seem to reach accurate production later than stops. It would be more informative to know what *sorts* of errors occurred for the later-produced sounds. If they are devoicing errors, and if errors reflect perceptual abilities, this would lead to greater rates of (say) s/z confusions than d/t confusions. However, Smit et al. (1990) note that most errors in older children are not voicing errors but dentalizations, which should not lead to s being confusable with z.

Reference

Smit, A. B., Hand, L., Freilinger, J. J., Bernthal, J. E., & Bird, A. (1990). The Iowa Articulation Norms project and its Nebraska replication. *Journal of Speech and Hearing Disorders*, 55(4), 779–798. <https://doi.org/10.1044/jshd.5504.779>