I will review some studies investigating the sensitivity of the production system to artificial phonotactic distributions. For example, if experimental participants produce many syllables in which /f/ is an onset, but never a coda, their speech errors will come to reflect this restriction. This sensitivity, I claim, reflects a learning process whereby the the distribution of segments is implicitly tracked, resulting in the acquisition of the local phonotactics present in the experiment. I will review some new studies that test whether this learning process occurs separately in the perception and production systems and will consider how we should think about the relation between the learning in these artificial situations and real language learning.