Over the last two decades, research in language acquisition has been influenced by the discovery that human learners possess a remarkable ability to track distributional regularities available in speech input. Notably, however, much of this statistical learning research has implicitly assumed that the task of the learner is to acquire a single, uniform pattern. Given that real world learning affords far more variability in the input, this simplifying assumption may obscure a significant problem confronting learners; namely, learners must determine how many underlying structures are generating the input. For the last several years, research in my lab has focused on this problem using a variety of experimental approaches. Our findings suggest that learners can track statistics in a contextually sensitive manner, and that their bias toward stationarity (i.e., expecting a single underlying structure) can be overcome by presenting the input in a more varied manner. By extension, we find that bilinguals may alter some of their assumptions about statistical learning based on their experience juggling two languages. I conclude by highlighting a possible tradeoff between being an efficient learner versus detecting multiple statistical inputs.