



Supplementary Figure S4: Complementary analyses of the significance of song learning. To assess the significance of learning and the degree to which songs could resemble those of the tutors by chance, we analyzed the similarity of the songs of tutored and untutored pupils to tutor songs. To complement the t-tests reported in the main text, we conducted additional analyses where we consider the similarities of each individual untutored bird ($n=13$) to the tutor songs. (A) We tutored song-naïve pupils with the songs of one of two tutors. There was no significant difference in the similarity of an untutored bird's song to each of the tutor's song (paired t-test); therefore, we averaged each untutored pupil's similarity scores across the two tutors (i.e., each untutored bird is represented by a single %similarity value; "untut"). We then analyzed group variation in song similarity using an ANOVA (whereas statistical models in the main text include nestID as a random factor, nestID could not be included in this model because the nest of some untutored birds was unknown). We continue to find the same patterns of significance as reported in the manuscript ($F_{2,22}=20.0$, $p<0.001$). Specifically, in song-naïve pupils (A), NE pupils demonstrated significant learning ($p<0.001$; i.e., significantly different than untutored birds) while control pupils did not ($p=0.39$). Sequentially tutored pupils (B) were each tutored with the song of one tutor, so the similarity scores of untutored birds to that tutor were used as the reference. There was a significant difference across conditions ($F_{2,17}=4.2$, $p=0.033$), with NE pupils demonstrating significant learning ($p=0.027$) but not control pupils ($p=0.96$).