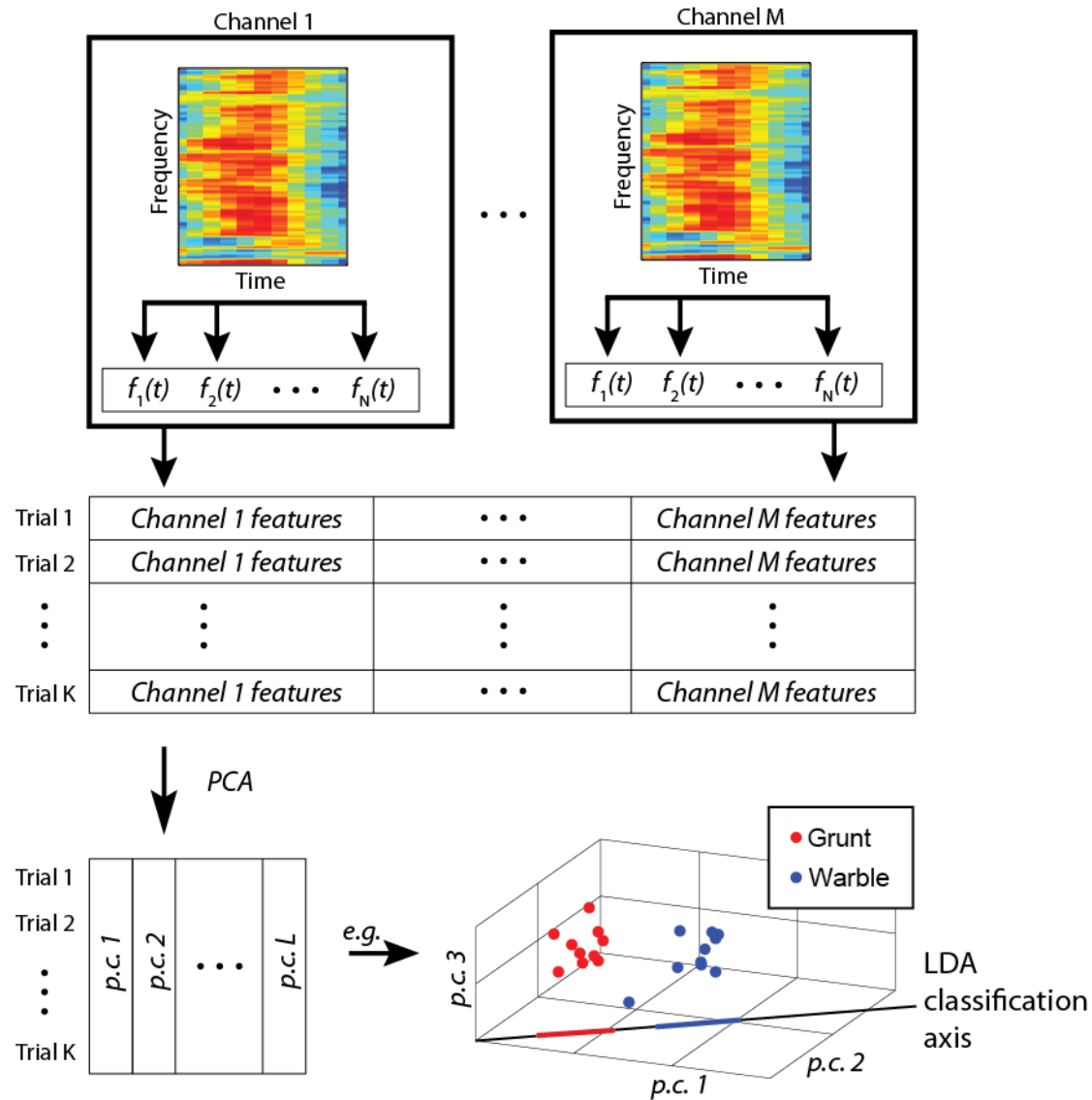
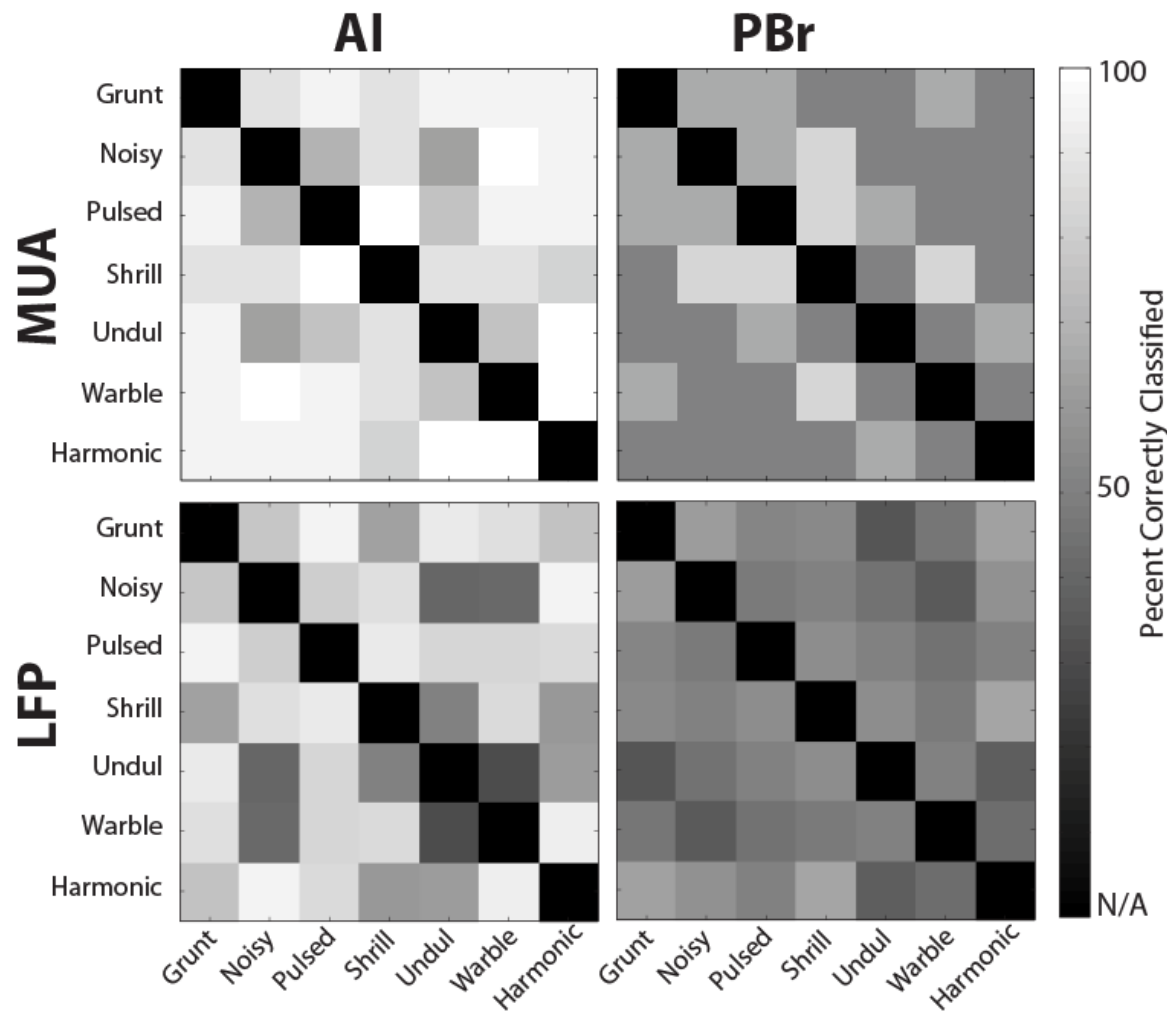


## Supplemental Material



Supplemental Figure 1. Summary of decoding method for LFP. We began with spectrograms for each trial over all channels. All neural features were unwrapped along the trials dimension and PCA was applied to this matrix. The PCA reconstruction determined from the training set was then applied to the testing set and LDA was used to classify the identity of the vocalization for each trial. A comparable method was



Supplemental Figure 2. Pair-wise decode performance for MUA and LFP -based decodes in AI and PBr. The top two panels show confusion matrices for MUA-based performance for AI and PBr, while the bottom two show LFP-based performance. Mean performance is indicated in grayscale from zero to one hundred percent. Chance performance is 50%.