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Supplementary document for Evaluating Model Misspecification in Independent Component Analysis

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This document contains supplementary figures for the manuscript entitled, “Independent Component Analysis of the Mixture with Time-lag and its Evaluation”, submitted to the *Journal of Statistical Computation and Simulation* for publication review.

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1. Figures for Section 4.2

Figure 1 displays the five sound sources in Section 3.2.

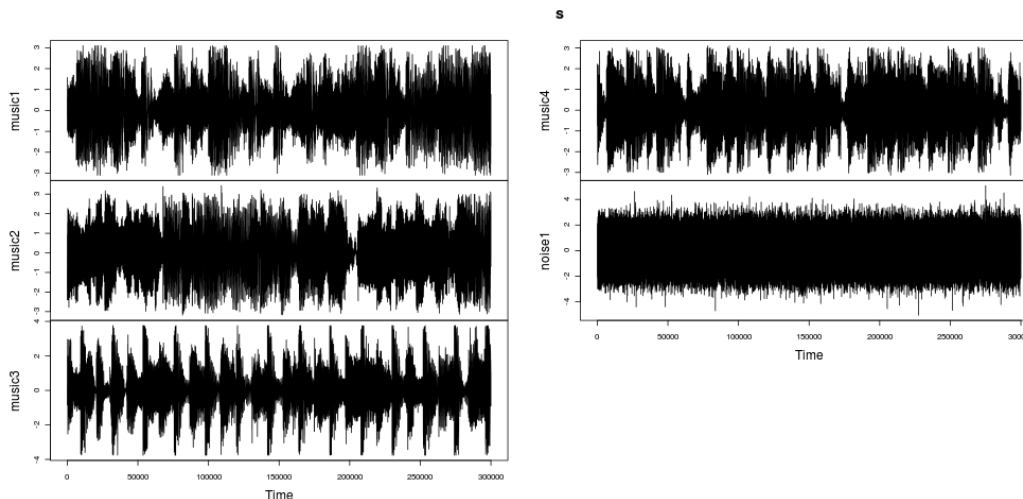


Figure 1. Four audio recordings and one simulated noise.

2. Figures in Section 5

Figure 2 illustrates the experimental paradigm described in Section 5. Figure 3 (a) shows the absolute correlation matrix between the sources recovered by four ICA algorithms.

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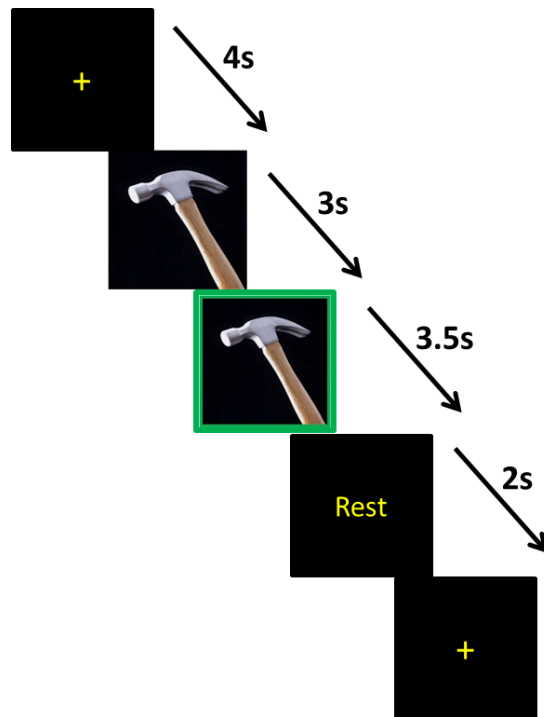
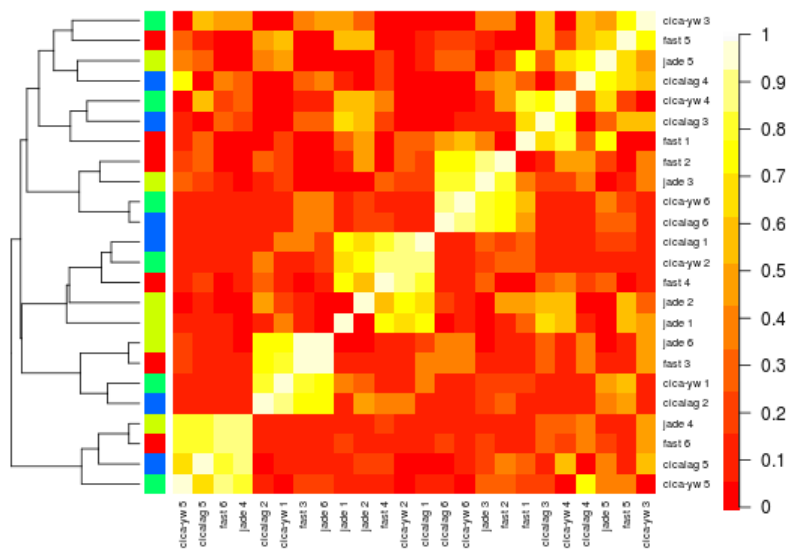


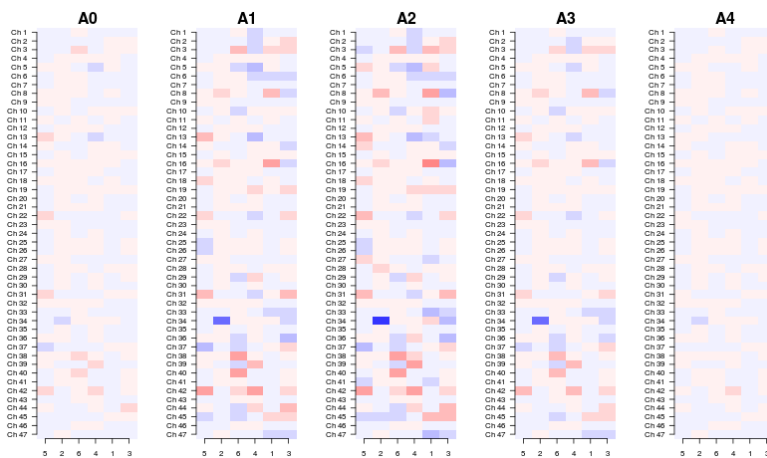
Figure 2. Tool use task. The photograph immediately after the fixation cross is the “prepare” stimulus, during which subjects do not move. When the photograph is surrounded by the green border (“go”), subjects are to pantomime the use of the tool.

To see clustering patterns between estimated sources, we applied hierarchical clustering with complete linkage to the absolute value of the correlation matrix. Figure 3 (a) reveals the ICA algorithms recover similar (i.e. highly correlated) components. As the clustering results suggests, we reorder the components and their topographies. Figure 3 (b) displays the estimated mixing matrices at different time lags. TimelagICA estimates 4 as the order of time lag. The mixing coefficient matrices suggests there is a time delay of order 1.

Figure 4 shows the estimated source by the ICA algorithms. The first two components, which appear to all ICA algorithms, represent eye blinks and DC low-frequency drift.



(a) Clustering of Correlation Matrix



(b) Mixing Coefficients of timelagICA

Figure 3. Correlations between estimated sources by four ICA algorithms. (b) shows mixing coefficient matrices estimated by timelagICA.

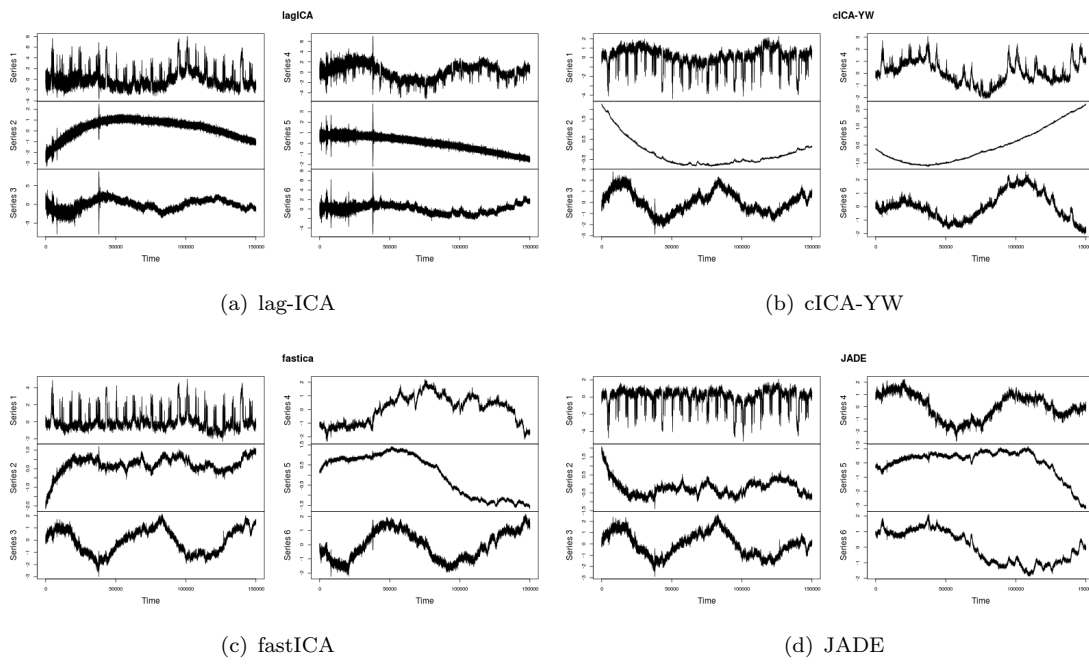


Figure 4. Estimated Sources