



# Comparison of cognitive and musical aptitude abilities by a multimodal fusion approach of sMRI and fMRI data of musicians and non-musicians

## ABSTRACT

Numerous studies have indicated that musical abilities/training attributes to a positive effect on a variety of therapeutic, motor, developmental and overall cognitive abilities. But it is not entirely known if these desirable effects are due to these musical abilities or due to their inherent musical aptitude. Therefore, this study could understand the origins of these desirable effects by doing a multimodal fusion approach.

## OBJECTIVE

- Using Voxel Based Morphometry on the structural connectivity data to identify ROIs for musical aptitude.
- Identify functional measures using graph theory methods and musical aptitude.
- Fusing sMRI and fMRI data using multi-modal fusion based techniques like JICA, JICA+MCCA .

## METHOD

- T1 weighted MPRAGE images were obtained from the participants. These images were analysed using a Voxel Based Morphometry approach. Later regression analyses was done between the VBM modified images and musical aptitude to identify Regions of Interest.
- The fMRI images were preprocessed and graph based network analysis was done on the images to identify ROIs for musical aptitude.
- Joint ICA –mCCA analysis is to be done on the sMRI and fMRI images for further analysis.

