

# Review of: "Prediction and Analysis of Structural Brain Health Indicators Using Deep Learning Models with Functional Brain Images as Input"

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This is a well-written article addressing an important issue in mental health assessment from neuro-imaging data. The main concept introduced here is that grey-matter based brain healthcare quotient (GM-BHQ) obtained from structural brain images can also be predicted from the functional MRI images with a reasonable confidence. A graph based neural network is trained to predict these scores from functional images and achieve good performance. Graph representations are achieved based on functional correlations between brain regions.

Results are well-presented and training and data analysis step look rigorous. My curiosity is that first of all the GM-BHQ itself is a broad estimate of mental health and its ageing-related deterioration, so how useful will be a method which is only correlated by Pearson value of 0.6 with it. Further, the direct association between clinical indicators of mental health and proposed FC-BHQ cannot be accurately estimated. For example, it is possible that FC-BHQ can estimate brain aging and vulnerability better or worse than GM-BHQ, both of which may produce a lower than perfect correlation in this prediction. In summary, a good BHQ should try to estimate clinical parameters of mental health, instead of its indirect estimate if possible.