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

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Potential competing interests: No potential competing interests to declare.

The author propose a functional MRI-based measure, FC-BHQ, to evalue the brain health by exploring the relationship between GM and rsFC. Here are some concerns:

In Abstract, “However, an index to evaluate brain health considering the functional aspect of the brain is needed, but has not yet been established. This is because resting-state functional connectivity MRI provides multivariate time-series data, which is difficult to reduce to a single feature or scalar like gray matter volume.” Recently, quite a few studies have proposed low-dimensional representations for rsfMRI data. Your claim here is unfounded.

The title is “Prediction and Analysis of Structural Brain Health Indicators Using Deep Learning Models with Functional Brain Images as Input”. But in the Abstrast, you said"However, an index to evaluate brain health considering the functional aspect of the brain is needed, but has not yet been established". The contribution of this work is ambiguous.

In Introduction, more application or evidence of GM-BHQ efficiency should be described.

There was no section 2.1.4, check it in “The GM images obtained in the above procedures were used for voxel-based morphometry, as described in Section 2.1.4”.

More details of data pre-processing should be provided. Including (i) it's controversial ro regress out the global signal, how do you consider that. (ii) motion regression is important for data quality, how did you do that? (iii) Does the full-frequency band of the rsfMRI data was used?

In 2.3.3, part one. “Finally, GM-BHQ was obtained by transforming the standardized GMV of each subject by defining the mean GM-BHQ of the subjects as 100 points and the standard deviation as 15 points, as in the calculation of intelligence quotient”. How the “100 points” and “15 points” was obtained?

A brief conclusion could be helpful to capture the main contribution.