CLAIMS

WHAT IS CLAIMED IS:

1. A method for determining personalized stimulation parameters for non-invasive stimulation of a brain of a subject, the method comprising:

sequentially stimulating using transcranial magnetic stimulation (TMS), each of a plurality of locations within a brain region of the subject, the brain region forming a node of a functional brain network of connected nodes in the brain of the subject;

sensing, using one or more electroencephalography (EEG) electrodes arranged on a scalp of the subject, a plurality of TMS-evoked potentials in response to sequentially stimulating the plurality of locations within the brain region of the subject using TMS; and

determining, based at least in part on at least one characteristic of the plurality of TMS-evoked potentials, personalized stimulation parameters for the subject,

wherein the personalized stimulation parameters include a location of stimulation within the brain region and one or more stimulation characteristics, the one or more stimulation characteristics including a personalized intensity of stimulation.

2. The method of claim 1, wherein the one or more stimulation characteristics further include a personalized frequency of stimulation.

3. The method of claim 1, further comprising:

sensing a resting motor threshold in response to providing non-invasive stimulation of a motor cortex region of the brain of the subject;

determining a baseline intensity of stimulation based, at least in part, on the resting motor threshold; and

adjusting the baseline intensity of stimulation based, at least in part, on the personalized intensity of stimulation.

4. The method of claim 1, wherein the brain region is a node of a Default Mode Network (DMN).

5. The method of claim 1, further comprising providing non-invasive stimulation to the determined location of stimulation of the brain of the subject according to the determined one or more stimulation characteristics, wherein the non-invasive stimulation comprises at least one of transcranial electrical stimulation or transcranial magnetic stimulation.

6. The method of claim 5, wherein the non-invasive stimulation provided to the determined location of stimulation is combined with a different non-invasive stimulation, delivered sequentially or simultaneously, including transcranial electrical stimulation.

7. The method of claim 1, wherein determining the personalized stimulation parameters comprises selecting a location of stimulation from the plurality of locations having a largest peak magnitude of the plurality of TMS-evoked potentials.

8. The method of claim 1, wherein the at least one characteristic of the plurality of TMS-evoked potentials comprises a signal amplitude.

9. The method of claim 1, wherein sequentially stimulating using transcranial magnetic stimulation (TMS) comprises sequentially stimulating using single-pulse TMS.

10. A system for determining personalized stimulation parameters for non-invasive stimulation of a brain of a subject, the system comprising:

a stimulation device configured to sequentially stimulate using transcranial magnetic stimulation (TMS), each of a plurality of locations within a brain region of the subject, the brain region forming a node of a network of connected nodes in the brain of the subject;

a sensor device including one or more electroencephalography (EEG) electrodes configured to sense, in response to the sequential stimulation of the plurality of locations within the brain region, a plurality of TMS-evoked potentials; and

a processor configured to determine personalized stimulation parameters for the subject based at least in part on at least one characteristic of the plurality of TMS-evoked potentials, wherein the personalized stimulation parameters include a location of stimulation within the brain region and one or more stimulation characteristics, the one or more stimulation characteristics including a personalized intensity of stimulation.

11. The system of claim 10, wherein the one or more stimulation characteristics further include a personalized frequency of stimulation.

12. The system of claim 10, wherein the sensor device is further configured to sense a resting motor threshold in response to providing non-invasive stimulation of a motor cortex region of the brain of the subject; and the processor is further configured to i) determine a baseline intensity of stimulation based, at least in part, on the resting motor threshold; and ii) adjust the baseline intensity of stimulation based, at least in part, on the personalized intensity of stimulation.

13. The system of claim 10, wherein the brain region is a node of a Default Mode Network (DMN).

14. The system of claim 10, wherein the stimulation device is further configured to provide non-invasive stimulation to the determined location of stimulation of the brain of the subject according to the determined one or more stimulation characteristics, wherein the non-invasive stimulation comprises at least one of transcranial electrical stimulation or transcranial magnetic stimulation.

15. The system of claim 14, wherein the non-invasive stimulation provided to the determined location of stimulation is combined with a different non-invasive stimulation, delivered sequentially or simultaneously, including transcranial electrical stimulation.

16. The system of claim 10, wherein determining the personalized stimulation parameters comprises selecting a location of stimulation from the plurality of locations having a largest peak magnitude of the plurality of TMS-evoked potentials.

17. The system of claim 10, wherein the at least one characteristic of the plurality of TMS-evoked potentials comprises a signal amplitude.

18. The system of claim 10, wherein the stimulation device is configured to sequentially stimulate each of the plurality of locations within a brain region of the subject using single-pulse TMS.