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### **Title page:**

**Left-handedness is associated with more semantic activity in certain cortical regions in the right hemisphere — supplementary Figures.**

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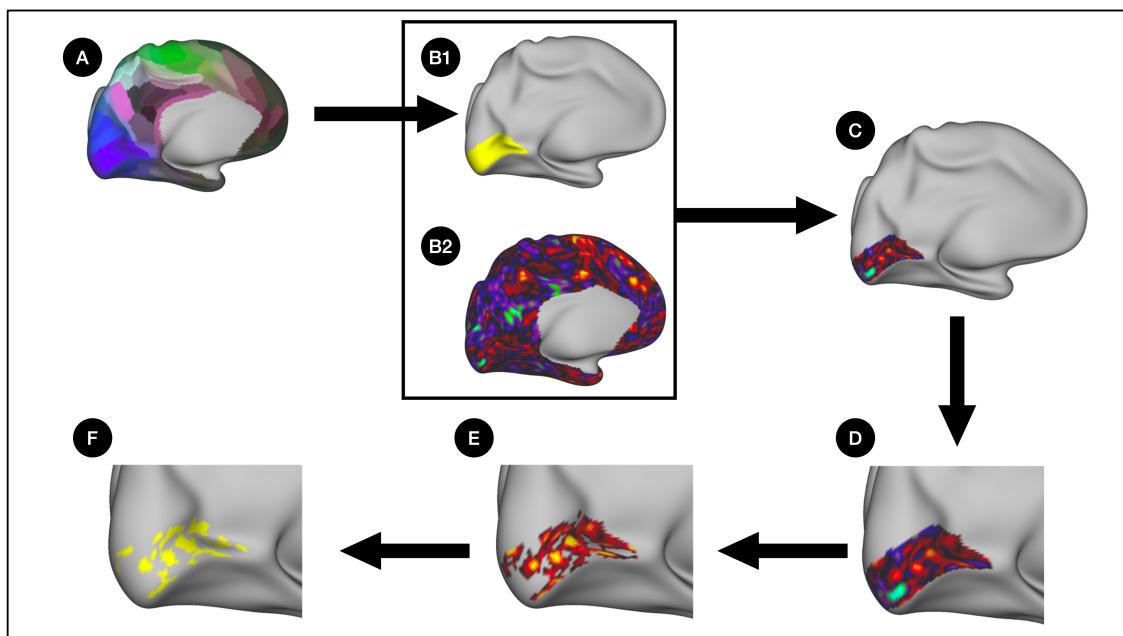
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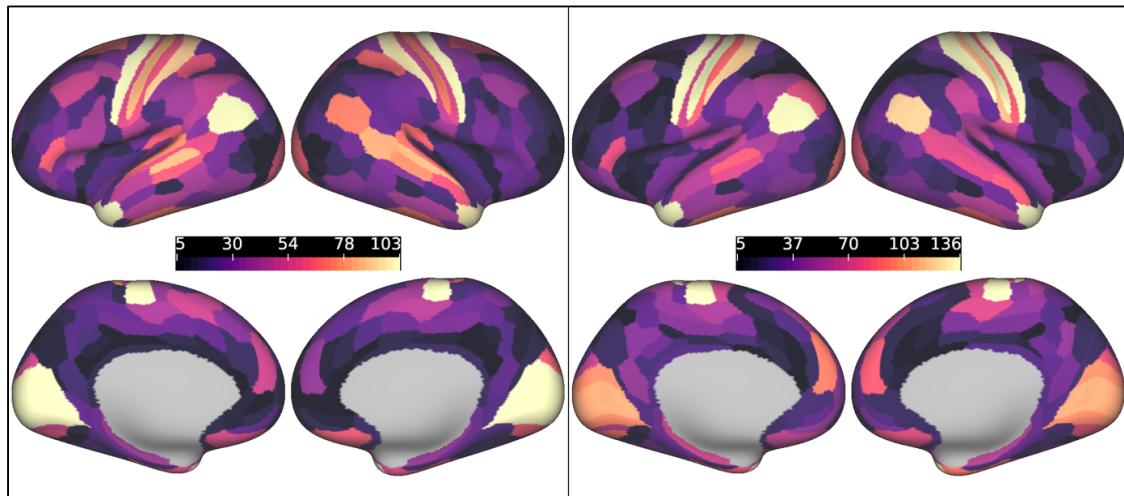
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**Supplementary Figure. 1.** Methodology to calculate the positive elements in every MMP area. The MMP label file is imported (A) and separated into 180 regions in each hemisphere (B1). Each region from the MMP atlas (B1) was used to mask the subject's z-statistics dense grayordinate map (B2). The outcome will be a z-statistics dense grayordinate map within the selected MMP region (C and D). The surface elements with negative values are excluded (E). Only positive elements with a z-statistics value equal to or greater than the mean within the specific MMP region (F) number were counted.



**Supplementary Figure 2.** The mean values of the PE numbers in every MMP region in the STORY (left) and STORY-MATH (right) contrasts.



**Supplementary Figure 3.** An illustrative example of the hemispheric difference in the PEs numbers in the STORY-MATH language tasks in each MMP region in a right- and left-handed subject. The RHs have more PEs numbers on the left side of the brain (see also Fig. 2E). However, in LHS, the right hemisphere gains more PEs, especially in certain regions (see Fig. 8 and Supplementary Figure 2), which allows the right hemisphere to acquire a total PEs number at a similar level to that of the left side.

