

## Supplementary Figure Legend 1:

*Note: N=15, PFC=Prefrontal Cortex, ACC=Anterior Cingulate Cortex, PCC=Posterior Cingulate Cortex.*

In order to assess if the brain mechanisms associated with meditation-related anxiety relief are distinct from meditation-related pain relief (Zeidan *et al.*, 2011), we conducted two separate regression analyses corresponding to MRI session 2 (after mindfulness meditation training).

In one regression analysis, we compared rest (2 MRI series) to meditation (2 MRI series) analyzing noxious (heat) stimulation series (4 MRI series total) only. We entered A) the percent change in pain intensity ratings, B) the percent change in pain unpleasantness ratings, and C) the percent change in State Anxiety Inventory ratings as regressors. In the second regression analysis, we compared rest (2 MRI series) to meditation (2 MRI series) analyzing the innocuous thermal (neutral) stimulation trials (4 MRI series total) only. We entered A) the percent change in pain intensity ratings, B) the percent change in pain unpleasantness ratings, and C) the percent change in State Anxiety Inventory (SAI) ratings as regressors.

In the presence of noxious heat stimulation (49°C), reductions in pain intensity (A) and unpleasantness (B) ratings were not associated with brain regions involved in meditation-related anxiety relief. In correspondence with our previous findings, reductions in pain intensity ratings were associated with increased rostral ACC and bilateral anterior insula activation (A) during meditation and noxious heat stimulation (49°C). Furthermore, activation in the orbito-frontal cortex and deactivation in the thalamus, superior frontal gyrus, posterior cingulate cortex, occipital lobe, and medial prefrontal cortex (B) predicted reductions in pain unpleasantness ratings in the presence of meditation and noxious heat stimulation. Meditation-related percent changes in SAI ratings in the presence of noxious heat stimulation were associated with bilateral activation of SII and left anterior insula(C). Meditation-related percent changes in SAI ratings, in the presence of noxious heat stimulation, were associated with deactivation in the posterior cingulate cortex and the occipital lobe.

In the presence of neutral stimulation, meditation-related percent change in pain intensity ratings are associated with activation in the left anterior insula and there was no significant meditation-related activation predicting the percent change in pain unpleasantness ratings. However, significant rest-related brain activation was detected in the posterior cingulate cortex, medial frontal cortex, and the occipital lobe. Brain mechanisms associated with meditation-related anxiety relief (C) were detected in the ventromedial prefrontal cortex, perigenual anterior cingulate cortex anterior cingulate cortex, bilateral secondary somatosensory cortices and deactivation of the posterior cingulate cortex, when percent change in pain ratings are entered as regressors.