Supplementary Material

Second-Level Statistical Models: Group-Specific Activation Through Exclusive Masking. To more sensitively probe for task-related activation unique to each experimental group, we employed an exclusive masking approach. Each attention condition (i.e., Breathe, Suppress, and Maintain) was contrasted against the other experimental conditions within an experimental group, and masked by the results of the same contrast preformed within the other group. For example, to identify unique Breathe task-related activity in the MT group, we contrasted Breathe against Suppress, Maintain and baseline conditions in the MT group, and masked out any significant regions from the same contrast performed in the untrained group. To maximize our ability to detect group-specific differences, the voxel threshold for the exclusive mask images was set at a liberal $P_{uncorrected} < .1$, while the threshold for the group being investigated was maintained at $P_{uncorrected} < .005$, with an extent threshold of $K \geq 50$. Regions identified through this approach were subjected to post hoc analysis of task-related activity across both groups to determine whether they demonstrated significant interactions between group and task.

Results of Exclusive Masking. The exclusive masking technique more powerfully revealed regions of task-related activity unique to each group (Supplementary Table 1). Relative to the MT group, the untrained group demonstrated unique DMPFC activity during breath monitoring, and unique thalamic and caudate activity during the maintain condition, consistent with increased attentional deployment during these tasks. Relative to the untrained group, the MT group demonstrated unique right anterior insula, posterior cingulate and cerebellar activity during breath monitoring (Supplementary Figure 1A), consistent with the engagement of a distinct viscerosomatic network during deployment of IA. The MT group also demonstrated

unique MPFC and left insula activity during the suppress task (Supplementary Figure 1B), and unique DMPFC activity during the maintain task (Supplementary Figure 1C), consistent with greater prefrontal activation in EA relative to IA in the MT group.

Supplementary Tables

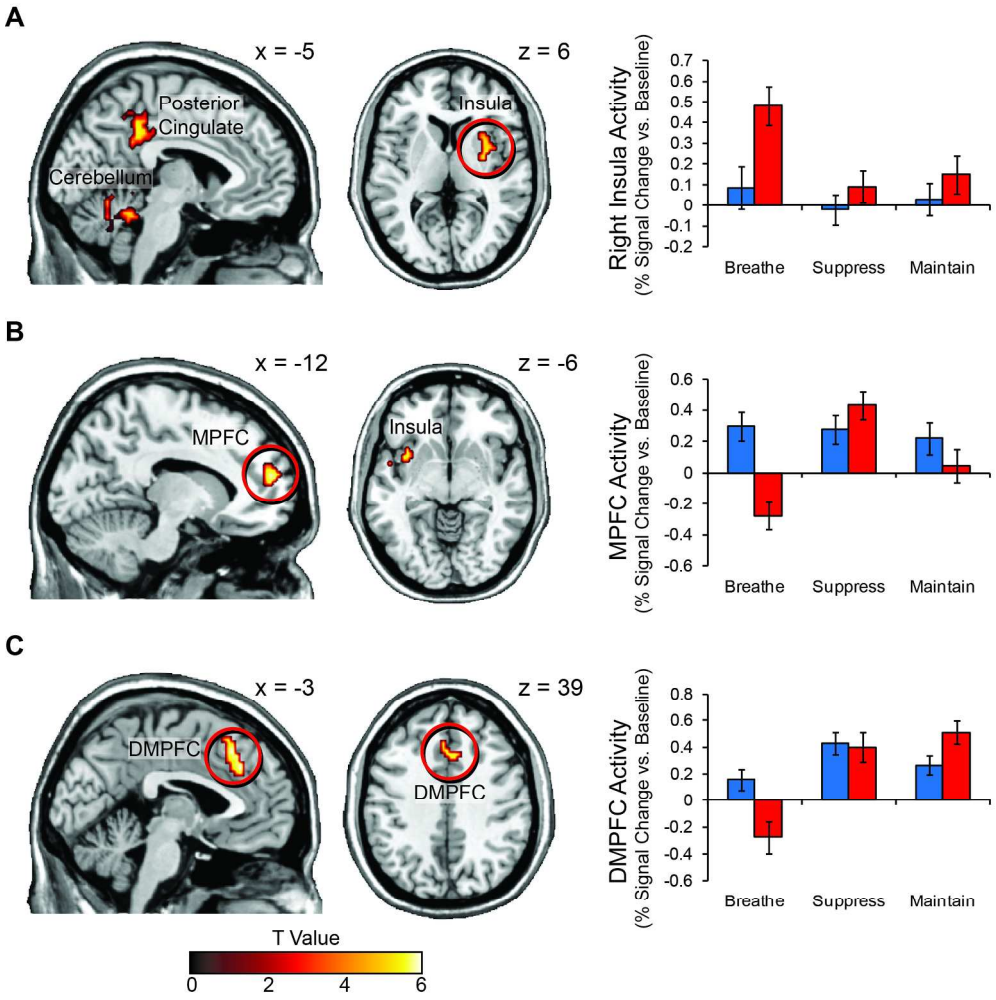
Supplementary Table 1. Regions of Group-Specific Task Activity through Exclusive Masking

Description	BA	Side	Cluster size	Peak Z	Co-ordinates X	y	z
Breathe in Untrained Group							
Dorsomedial Prefrontal Cortex	32	L	101	4.40	-18	24	48
Breathe in MT Group							
Posterior Cingulate	23	B	89	4.39	-12	-39	33
Cerebellum	-	B	152	3.92	-9	-60	-12
Middle Insula / Putamen	-	R	110	3.88	33	3	9
Suppress in Untrained Group							
No activations observed							
Suppress in MT Group							
Anterior Insula	-	L	50	4.81	-45	15	-15
Medial Prefrontal Cortex	32 / 10	L	104	4.46	-21	57	15
Maintain in Untrained Group							
Anterior Thalamus	-	B	108	6.09	3	-15	9
Head of Caudate Nucleus	-	R	50	4.37	18	12	-6
Head of Caudate Nucleus	-	L	77	3.76	-21	6	-6
Maintain in MT Group							
Dorsomedial Prefrontal Cortex	32	B	66	4.07	-3	33	36

Notes. BA = Broadmann Area. R = right; L = left; B = Bilateral; in the case of bilateral activations, the peak listed is for the side with the greater peak activation

Supplementary Figure Captions

Supplementary Figure 1. Regions of task-specific activation unique to the MT group. Exclusive masking using task contrasts within the untrained group revealed task activations unique to the MT group. Panel A: MT-specific breathe task activation was observed in the posterior cingulate, cerebellum, and right middle insula / putamen. Panel B: MT-specific suppress task activation was observed in the MPFC and left insula. Panel C: MT-specific maintain task activation was observed in the DMPFC. Bar graphs demonstrate significant post-hoc interactions between task and attention condition at the $p < .05$ level. Bar graphs display task activations relative to the within-participant baseline period. Error bars are standard errors. In all three task conditions, MT-specific activations appear to be driven by altered activity during the breathe condition. MPFC = medial prefrontal cortex. DMPFC = dorsal medial prefrontal cortex.



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