

# Supporting Information

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## SI Materials and Methods

**Behavioral Procedure: Details.** Subjects completed 3 practice task sessions before scanning, for a total of  $\approx 39$  min of practice including 48 thought probes. Practice was extensive to reduce learning effects during scanning and enhance mind-wandering. Once positioned in the scanner, subjects completed 5 sessions of the task, each  $\approx 13$  min in duration. The task was back-projected onto a screen mounted at the end of the scanner bore. A mirror attached to the head coil enabled subjects to view the stimuli.

Each session consisted of 329 trials and included 16 thought probes, 16 targets and 297 nontargets. The order of events (targets and thought probes) was pseudocounterbalanced so that a variable distance between events (5–15 trials) was uniformly distributed within each session (3 events appeared 5 trials apart, 3 events appeared 6 trials apart, and so on up to a distance of 15 trials apart).

**General Linear Model: Regressor Construction.** Condition effects at each voxel were estimated according to the general linear model. The model included: (i) the observed time-series of intensity values, representing the dependent variable; (ii) covariates mod-

eling session-specific effects, later treated as confounds; and (iii) regressor functions constructed by convolving condition specific box-car functions with a synthetic hemodynamic response function (HRF).

Thirteen regressor functions were constructed. First, the preprobe intervals (each including 5 nontarget trials) were separated into 4 types, depending on the subjects' response to each probe: "off-task aware," "off-task unaware," "on-task aware," and "on-task unaware." Four regressors were used to model each kind of preprobe interval. Second, 2 regressors were used to model the occurrence of the probes themselves (one for probe 1 and one for probe 2). The probes were modeled to dissociate the state of being focused on- or off-task from the effect of the thought probe itself. Third, the 10-s pretarget intervals were separated into those preceding correct target responses (correct withholds) and those before incorrect responses (commission errors). Two regressors modeled the 2 kinds of pretarget intervals. Finally, 3 additional regressors were used to model correct responses to targets, incorrect responses to targets, and correct responses to nontargets.

**Table S1. Activation peaks prior to mind wandering in the absence of meta-awareness**

Region	L/R/M	BA	No. of voxels	Z value	Talairach coordinates		
					x	y	z
<b>Frontal</b>							
Dorsal ACC	M	32	235	4.69	2	28	32
Ventral ACC	M	32	17	3.39	2	42	0
Medial frontal gyrus	M	9	—	3.43	-14	40	32
Superior frontal gyrus	M	10	19	3.84	-6	66	24
Mid-cingulate gyrus	M	24	643	3.91	-2	-6	40
Middle frontal gyrus	R	10	5	3.4	20	60	20
Superior frontal gyrus	L	9	39	4.15	-10	56	36
Superior frontal gyrus	R	9	32	3.54	18	50	32
Inferior frontal cortex	R	47	19	3.76	50	30	-4
Superior frontal gyrus	M	8	45	3.7	-8	28	52
<b>Parietal</b>							
Precuneus	L	7	110	3.51	8	-56	32
Precuneus	L	7	49	3.54	18	-40	52
Posterior cingulate cortex	L	31	—	3.44	2	-44	32
<b>Temporal</b>							
Temporoparietal junction	L	39	91	4.2	-58	-64	28
Middle temporal gyrus	R	20	164	4.85	56	-28	-12
Temporopolar cortex	R	38	82	4.44	42	22	-20
Temporopolar cortex	L	38	27	3.81	-40	12	-28
Middle temporal gyrus	L	21	—	3.28	-44	6	-32
Middle temporal gyrus	R	21	66	3.87	58	-4	-24
<b>Subcortical</b>							
Posterior insula	R	—	55	3.91	38	-32	4
Anterior insula	L	—	22	3.58	-30	20	4
Putamen	M	—	13	4.2	-14	4	0
Cerebellum	L	—	23	3.56	26	-40	-32
Cerebellum	R	—	12	3.69	-28	-82	-44

Intervals prior to "off-task" unaware reports vs. intervals prior to on-task" reports. All activations were significant at the  $P < 0.001$  level ( $k > 5$ ).

**Table S2. Activation peaks prior to mind wandering with meta-awareness**

Region	L/R/M	BA	No. of voxels	Z value	Talairach coordinates			P
					x	y	z	
<b>Frontal</b>								
Dorsal ACC	M	24	29	3.42	-8	2	28	<0.001
Dorsal ACC	M	32	24	2.89	0	30	32	<0.005
Ventral ACC	M	24/32	32	3.07	0	34	-4	<0.001
Middle frontal gyrus	L	9	88	3.24	-42	16	40	<0.001
<b>Parietal</b>								
Temporoparietal junction	L	39	18	2.81	-48	-52	24	<0.005
Superior parietal cortex	L	7	12	2.91	-42	-56	48	<0.005
Precuneus	M	7	10	2.8	-6	-46	52	<0.005
<b>Subcortical</b>								
Posterior insula	L	—	46	3.62	-38	-20	12	<0.005
Anterior insula	L	—	49	3.42	-36	32	12	<0.005
Thalamus	L	—	25	3.28	-10	-28	-8	<0.001

Intervals prior to off-task aware reports vs. intervals prior to on-task reports. Activations were thresholded at  $P < 0.005$  in order to allow for subthreshold comparison of activations in Table 3. Peaks surviving threshold of  $P < 0.001$  are distinguished from those surviving  $P < 0.005$ .