SUPPLEMENTARY ONLINE MATERIAL

STUDY 1: WHOLE-BRAIN CORRELATIONS BY EXPERIMENTAL CONDITION

Table S1. *Peak voxel in MNI coordinates and number of voxels for brain regions that showed changes in activity during target image processing following a confirmation which correlated with participants' reaction times.*

Region	***r***	**Hemisphere**	**Voxels**	**Max z-value**	**x**	**y**	**z**
Condition A: Matching target image following a confirmation message							
Paracingulate Gyrus (extending into the Superior Frontal Gyrus)	+	R/L	1061	5.17	-4	18	44
Parahippocampal Gyrus (extending into Precuneus)	-	L	237	4.53	-34	-40	0
Planum Temporale	-	L	203	4.23	-58	-30	16
Central Operculum Cortex	-	L	259	4.26	-56	-6	12
Temporal Operculum Cortex (extending into Superior and Middle Temporal Gyri)	-	R	387	4.08	64	-18	-2
Condition B: Mismatching target image following a confirmation message							
Insula (extending into Frontal Orbital Cortex)	+	R	334	4.17	36	20	-6
Paracingulate Gyrus (extending into Superior Frontal Gyrus)	+	R/L	826	4.42	0	26	46

NB: *Results identified by a series of whole brain analyses at a cluster-forming threshold of $Z > 3.09$ and $p < 0.05$ (FWE-corrected).*

Table S2. *Peak voxel in MNI coordinates and number of voxels for brain regions that showed changes in activity during target image processing following a correction which correlated with participants' reaction times.*

Region	***r***	**Hemisphere**	**Voxels**	**Max z-value**	**x**	**y**	**z**
Condition C: Matching target image following a correction message							
Frontal Operculum Cortex (extending into Insula)	+	L	219	4.16	-32	26	10
Paracingulate Gyrus (extending into Superior Frontal Gyrus)	+	R/L	746	5.01	-2	12	52
Condition D: Mismatching target image following a correction message							
Frontal Operculum Cortex (extending into the Insula)	+	R	299	4.73	32	22	10
Middle Frontal Gyrus (extending into Inferior Frontal Gyrus)	+	L	1095	4.41	-40	4	38
Paracingulate Gyrus (extending into Superior Frontal Gyrus)	+	R/L	2301	5.21	-2	14	50
Superior Occipital Cortex (extending into the Superior Parietal Lobule)	+	L	830	4.42	-28	-64	48

NB: *Results identified by a series of whole brain analyses at a cluster-forming threshold of $Z > 3.09$ and $p < 0.05$ (FWE-corrected).*

STUDY 1: MASKED-BRAIN ANALYSES

Theoretical Background: Based upon seminal findings in cognitive neuroscience, we expected that certain brain regions of interest (ROIs) should be of particular theoretical relevance during our fMRI analysis. Difficulties with encoding corrective information, for instance, were expected to result in increased activity in the anterior cingulate cortex (ACC) and the dorsolateral prefrontal cortex (DLPFC). The ACC has previously been linked to the detection of unexpected information (Braver, Barch, Gray, Molfese, & Snyder, 2001; Bush, Luu, & Posner, 2000; Carter et al., 1998; Carter & van Veen, 2007) and activity in the DLPFC (especially in the middle and superior frontal gyri) is known to support belief updating (Gläscher, Daw, Dayan, & O'Doherty, 2010; Kobayashi & Hsu, 2017; Nee et al., 2013). Therefore, we predicted that processing corrective (compared to confirming) verification

messages would result in enhanced activity in the ACC, middle frontal gyrus (MFG), and the superior frontal gyrus (SFG). We further hypothesized that difficulties with retrieving correct information should be reflected in activity changes in the hippocampus (HC), the inferior frontal gyrus (IFG) and the MFG, considering that all three regions support selective memory retrieval (Anderson et al., 2004; Badre & Wagner, 2007; Benoit & Anderson, 2012; Depue, 2012; Levy & Anderson, 2012; Nee & Jonides, 2008; Wimber et al., 2008). Specifically, we expected that activity in these regions should be enhanced in response to mismatching (relative to matching) target images, especially when these images follow correction messages (rather than confirmation messages). Based on these predictions, we re-ran the fMRI analyses as described in the main manuscript within a set of a-priori defined ROIs that comprised the ACC, HC, IFG, MFG, and SFG. Please note that the entire set of ROIs was considered during all analyses as described below.

Implementation: Bilateral masks for each region were based on the probabilistic Harvard-Oxford cortical/subcortical structural atlases available in FSL and set at a threshold of 30%. Statistical inference was made via permutation testing using FSL's RANDOMISE function and threshold free cluster enhancement (Smith & Nichols, 2009).

Contrast-Based Results: During verification message processing (i.e., during information encoding), the contrast confirmation > correction message returned significant activity in the ACC (36 voxels; peak voxel: x = 2, y = 32, z = 2; min p = .035). The reverse contrast returned no suprathreshold activity. During target image processing (i.e., during information retrieval), neither contrasting images that followed confirmation > correction messages, nor those that followed correction > confirmation messages, revealed any suprathreshold activation in the specified ROIs. Additional planned contrasts compared neural activity during information retrieval separately for accepted target images (i.e., as occurring during experimental conditions A and C) and for rejected target images (i.e., as occurring during experimental conditions B and D): The acceptance of matching target images following confirmation messages > correction messages returned no suprathreshold activation, and neither did the reverse contrast. The accurate rejection of mismatching target images following confirmation messages > correction messages returned marginally significant activity in the HC (2 voxels; peak voxel: x = 32, y = -12, z = -20; min p = .050). The reverse contrast identified no suprathreshold activation. Supplementary analyses that compared the two planned contrasts directly [(D>B) vs. (C>A)] returned no suprathreshold activation either.

Correlation-Based Results: A series of correlational analyses linked participants' reaction times and brain activity during the image categorization task. We first examined both positive and negative correlations for all ROIs in each of the four experimental conditions (see Tables S3 and S4). We then compared these correlations across conditions of the same image type. Given that these pairwise comparisons failed to return any significant differences, we subsequently collapsed our data across image type and compared correlations by verification message. But again, no significant differences emerged, indicating that the observed correlations were neither systematically affected by image type, nor verification message.

Table S3. *Peak voxel in MNI coordinates and number of voxels for regions of interest (ROIs) that showed changes in activity during target image processing following a confirmation which correlated with participants' reaction times.*

Region	***r***	**Hemi-sphere**	**Voxels**	**p-value**	**x**	**y**	**z**
Condition A: Matching target image following a confirmation message							
Inferior Frontal Gyrus	+	R	16	.032	48	22	8
Superior Frontal Gyrus	+	R	7	.031	6	14	52
Condition B: Mismatching target image following a confirmation message							
Anterior Cingulate Cortex	+	R	32	.026	6	26	36
Hippocampus	-	R	4	.034	36	-30	-8
Inferior Frontal Gyrus	+	L	102	.030	-44	20	6
	+	R	13	.023	44	22	6
Middle Frontal Gyrus	+	R	189	.016	36	12	62
	+	R	87	.039	44	34	38
	+	L	73	.026	-30	-2	50
	+	L	32	.042	-42	8	48
Superior Frontal Gyrus	+	R/L	1467	.002	6	24	48
	+	L	56	.035	-26	4	56

NB: *results identified by a masked analysis at a cluster forming threshold of $z > 3.09$ and $p < 0.05$ (FWE-corrected).*

Table S4. *Peak voxel in MNI coordinates and number of voxels for regions of interest (ROIs) that showed changes in activity during target image processing following a correction which correlated with participants' reaction times.*

Region	***r***	**Hemi-sphere**	**Voxels**	**p-value**	**x**	**y**	**z**
Condition C: Matching target image following a correction message							
No suprathreshold activation							
Condition D: Mismatching target image following a correction message							
Anterior Cingulate Cortex	+	R	42	.031	8	26	34
	+	R	18	.038	4	-2	34
Inferior Frontal Gyrus	+	L	436	.008	-48	12	16
Middle Frontal Gyrus	+	L	669	.001	-36	8	32
Superior Frontal Gyrus	+	R/L	171	<.001	0	26	48

NB: *results identified by a masked analysis at a cluster forming threshold of $z > 3.09$ and $p < 0.05$ (FWE-corrected).*

STUDY 2: REGION-OF-INTEREST ANALYSES

Theoretical Background: Compared to Study 1, we refined our set of ROIs in Study 2 (see Tables S3 and S4) to include all frontal and/or parietal regions of the brain that produced activation clusters of substantial size in a recent meta-analysis on memory updating and memory intrusion resistance (> 30 voxels; Nee et al., 2013). Specifically, we examined whether 11 regions known for their involvement in memory updating would show enhanced activity in response to verification messages that acted as corrections rather than as confirmations (see Table S5A). In addition, we examined whether eight regions typically involved in resisting memory intrusions would show differential responding during the processing of image pairs with and without explicit reference to prior misinformation (see Table S5B).

Table S5. *Peak voxel in MNI coordinates of brain regions of interest (ROIs) in Study 2 as taken from a meta-analysis by Nee and colleagues (2013).*

Region	**Hemisphere**	**x**	**y**	**z**
A. Regions Associated With Memory Updating				
Inferior Frontal Gyrus	R	56	12	14
	L	-50	20	28
Inferior Frontal Junction	R	48	4	38
Intraparietal Sulcus	R	36	-54	46
	L	-40	-52	52
Middle Frontal Gyrus	R	50	36	30
Presupplementary Motor Area	L	-2	4	62
Superior Frontal Sulcus	R	34	6	56
	L	-30	0	58
Precuneus	R	12	-66	60
	L	-10	-56	48
B. Regions Associated With Memory Intrusion Resistance				
Inferior Frontal Gyrus	R	38	28	2
	L	-36	22	2
Inferior Frontal Sulcus	L	-38	16	28
Precentral Gyrus	R	46	2	48
	L	-40	2	50
Precuneus	R	14	-56	50
Superior Frontal Sulcus	R	30	4	52
Superior Parietal Lobe/Intraparietal Sulcus	L	-22	-62	48

Implementation: Instead of masking large ROIs based on a probabilistic structural brain atlas as in Study 1, we used the coordinates from the relevant meta-analysis described above to build 10mm spheres around each ROI. This approach allowed us to extract mean % BOLD signal change for each ROI and experimental condition of interest in order to submit them to the relevant statistical analyses. First, we extracted the mean BOLD signal change for 11 ROIs (taken from Table 5A) during verification message processing (confirmation versus correction) and then compared these values using a series of paired t-tests. Second, we extracted the mean BOLD signal change for 8 ROIs (taken from Table 5B) during image pair processing based on the preceding verification message (confirmation versus correction) and again compared them using a series of paired t-tests. Third, we extracted the mean BOLD signal change for the latter 8 ROIs separately for all three experimental conditions (CONF_NEU, CORR_NEU, CORR_MIS) and then compared these values for each region using a one-way repeated measures ANOVA.

Encoding-Related Results: None of the ROIs responded differently towards news report that contained corrections rather than confirmations.

Table S6. *Mean % BOLD signal change for relevant regions of interest during the processing of verification messages that contained confirmations versus corrections in Study 2.*

Region	**Hemi-sphere**	**Confirmation Reports**	**Correction Reports**	***t*-value (*p*-value)**
Inferior Frontal Gyrus	R	-0.065	-0.104	1.529 (.138)
	L	0.813	0.826	0.297 (.769)
Inferior Frontal Junction	R	0.329	0.320	0.450 (.657)
Intraparietal Sulcus	R	0.278	0.224	1.750 (.092)
	L	0.313	0.260	1.366 (.184)
Middle Frontal Gyrus	R	0.227	0.167	1.005 (.324)
Presupplementary Motor Area	L	0.465	0.498	0.950 (.351)
Superior Frontal Sulcus	R	0.097	0.046	1.525 (.139)
	L	0.338	0.324	0.535 (.597)
Precuneus	R	-0.066	-0.083	0.321 (.751)
	L	-0.012	-0.003	0.503 (.619)

Retrieval-Related Results (By Verification Message): None of the ROIs responded differently towards memory probes that followed news reports which contained corrections rather than confirmations.

Table S7. *Mean % BOLD signal change for relevant regions of interest during image pair processing based on the type of verification message that preceded each image pair in Study 2.*

Region	**Hemi-sphere**	**Confirmation Reports**	**Correction Reports**	***t*-value (*p*-value)**
Inferior Frontal Gyrus	R	0.311	0.295	0.701 (.489)
	L	0.366	0.344	0.836 (.411)
Inferior Frontal Sulcus	L	0.772	0.819	1.793 (.085)
Precentral Gyrus	R	0.315	0.305	0.515 (.611)
	L	0.365	0.367	0.050 (.961)
Precuneus	R	0.082	0.081	0.063 (.951)
Superior Frontal Sulcus	R	0.159	0.154	0.319 (.752)
Superior Parietal Lobe/Intraparietal Sulcus	L	0.632	0.661	1.597 (.122)

Retrieval-Related Results (By Verification Message and Distractor Image Type): None of the ROIs responded differently towards memory probes from the three experimental conditions.

Table S8. *Mean % BOLD signal change for relevant regions of interest during image pair processing by experimental condition in Study 2.*

Region	**Hemi-sphere**	**CONF_ NEU**	**CORR _NEU**	**CORR _MIS**	***F*-value (*p*-value)**
Inferior Frontal Gyrus	R	0.311	0.266	0.287	1.939 (.165)
	L	0.366	0.309	0.336	2.299 (.121)
Inferior Frontal Sulcus	L	0.772	0.770	0.756	0.178 (.838)
Precentral Gyrus	R	0.315	0.264	0.306	2.993 (.068)
	L	0.365	0.329	0.354	1.190 (.321)
Precuneus	R	0.082	0.068	0.085	1.387 (.268)
Superior Frontal Sulcus	R	0.159	0.140	0.148	0.530 (.595)
Superior Parietal Lobe/Intraparietal Sulcus	L	0.632	0.618	0.614	0.409 (.668)

NB: CONF_NEU = confirmation reports followed by neutral image pairs without misinformation, CORR_NEU = correction reports followed by neutral image pairs without misinformation, CORR_MIS = correction reports followed by image pairs with misinformation.

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