

Supplementary Information

Supplementary Table S1

Handedness Task. Results from (Generalized) Linear Mixed Model analysis with EMOTIONAL AROUSAL (*Neutral, Negative*) and STIMULI (*Painful, Painless*) as within-subjects factor. In Cohort 1, GROUP (*Controls Med1, Med4*) was modeled as between-subjects factor. In Cohort 2, postgraduate EXPERIENCE was modeled as continuous predictor. The *lmer-syntax* of the tested model is the following:

Cohort 1 – Dep. Var. $\sim EA*STIMULI*GROUP + (EA*STIMULI|Subjects) + (GROUP|Materials)$.

Cohort 2 – Dep. Var. $\sim EA*STIMULI*EXP + (EA*STIMULI|Subjects) + (EXP|Materials)$.

The analysis was run on post-experimental ratings of Familiarity, Pain, Arousal and Valence (data from 3 subjects is missing from Cohort 2) as well as on on-line Accuracy and Reaction Times of correct responses. For each dependent variable (displayed vertically), and for each effect of interest (horizontally), the table reports the Z/t-value associated with the model parameters. Significant effects are highlighted.

	Accuracy	RTs [sec]	Arousal [1; 10]	Valence [-4; 4]	Pain [1; 10]	Familiarity [1; 10]
COHORT 1						
EMOTIONAL AROUSAL [EA]	Z = -2.51[‡]	$t_{(171)} = \mathbf{2.23‡}$	$t_{(68)} = \mathbf{13.11*}$	$t_{(103)} = \mathbf{-12.46*}$	$t_{(76)} = \mathbf{-17.74*}$	$t_{(68)} = \mathbf{-6.69*}$
STIMULI	Z = -0.18	$t_{(158)} = 1.45$	$t_{(105)} = 1.56$	$t_{(117)} = \mathbf{4.10*}$	$t_{(164)} = \mathbf{-3.06†}$	$t_{(75)} = -1.32$
GROUP [GR]: Contr. vs. Med1	Z = 1.41	$t_{(40)} = 0.30$	$t_{(40)} = 0.98$	$t_{(41)} = 1.68$	$t_{(40)} = 0.50$	$t_{(40)} = 1.36$
GROUP [GR]: Contr. vs. Med4	Z = 2.11[‡]	$t_{(40)} = 0.14$	$t_{(43)} = 0.27$	$t_{(46)} = -0.12$	$t_{(41)} = 1.46$	$t_{(41)} = 3.68$
EA*STIMULI	Z = -1.47	$t_{(170)} = 0.42$	$t_{(80)} = \mathbf{-4.91*}$	$t_{(120)} = -0.29$	$t_{(80)} = \mathbf{-9.51*}$	$t_{(122)} = 1.03$
EA*GR: Contr. vs. Med1	Z = 0.73	$t_{(112)} = -1.38$	$t_{(40)} = -1.77$	$t_{(41)} = 0.02$	$t_{(40)} = -1.15$	$t_{(40)} = 0.29$
EA*GR: Contr. vs. Med4	Z = -0.13	$t_{(144)} = \mathbf{-2.25‡}$	$t_{(45)} = -1.42$	$t_{(50)} = 1.66$	$t_{(41)} = -0.34$	$t_{(44)} = -1.03$
STIMULI*GR: Contr. vs. Med1	Z = -0.68	$t_{(76)} = 1.57$	$t_{(41)} = \mathbf{0.82}$	$t_{(41)} = -1.26$	$t_{(41)} = -0.07$	$t_{(41)} = -0.52$
STIMULI*GR: Contr. vs. Med4	Z = -0.80	$t_{(76)} = -0.78$	$t_{(52)} = \mathbf{0.85}$	$t_{(52)} = -1.35$	$t_{(44)} = -0.95$	$t_{(45)} = \mathbf{-4.44*}$
EA*STIM*GR: Contr. vs. Med1	Z = 0.06	$t_{(98)} = 1.20$	$t_{(41)} = \mathbf{0.97}$	$t_{(41)} = -0.63$	$t_{(40)} = \mathbf{0.83}$	$t_{(41)} = \mathbf{0.53}$
EA*STIM*GR: Contr. vs. Med4	Z = 0.07	$t_{(111)} = \mathbf{2.29‡}$	$t_{(47)} = \mathbf{1.08}$	$t_{(53)} = -0.67$	$t_{(41)} = -0.20$	$t_{(53)} = \mathbf{1.12}$
COHORT 2						
EMOTIONAL AROUSAL [EA]	Z = -2.92[†]	$t_{(106)} = \mathbf{2.05‡}$	$t_{(48)} = \mathbf{8.60*}$	$t_{(57)} = \mathbf{-5.91*}$	$t_{(36)} = \mathbf{13.07*}$	$t_{(70)} = \mathbf{-5.35*}$
STIMULI	Z = -1.03	$t_{(107)} = 0.33$	$t_{(78)} = \mathbf{3.94*}$	$t_{(121)} = -0.39$	$t_{(68)} = \mathbf{-2.32‡}$	$t_{(109)} = \mathbf{-7.82†}$
EXPERIENCE [EXP]	Z = 1.27	$t_{(28)} = 0.94$	$t_{(26)} = -1.64$	$t_{(25)} = -0.89$	$t_{(25)} = -1.05$	$t_{(26)} = 1.53$
EA*STIMULI	Z = 0.60	$t_{(112)} = -0.35$	$t_{(59)} = -0.62$	$t_{(97)} = \mathbf{-2.79*}$	$t_{(32)} = \mathbf{-5.71*}$	$t_{(80)} = 0.61$
EA*EXP	Z = -1.18	$t_{(28)} = 0.62$	$t_{(25)} = -0.65$	$t_{(25)} = 0.26$	$t_{(25)} = 0.52$	$t_{(25)} = 0.32$
STIMULI*EXP	Z = -1.62	$t_{(40)} = 0.07$	$t_{(26)} = -0.18$	$t_{(25)} = 0.14$	$t_{(25)} = \mathbf{0.88}$	$t_{(26)} = -1.00$
EA*STIMULI*EXP	Z = 1.43	$t_{(32)} = 0.32$	$t_{(25)} = \mathbf{0.73}$	$t_{(25)} = 0.25$	$t_{(25)} = -0.72$	$t_{(25)} = -0.72$

* $p < 0.001$; $†p < 0.01$; $‡p < 0.05$

Supplementary Table S2

Handedness Task. Regions displaying differential activity for the contrast $PF > cPF$. L and R refer to the left and right hemisphere, respectively. M refers to medial activations. Activations are displayed under Threshold-Free Cluster Enhancement (TFCE) approach. Cluster size is displayed in terms of consecutive voxels.

	SIDE	Coordinates			TFCE	Cluster Size
		x	y	z		
Cohort 1, Main Effect: $PF > cPF$						
Anterior Insula [AI]	R	34	22	8	1776.57 [†]	
Anterior Insula [AI]	L	-32	24	2	2039.35 [*]	
Posterior Insula [PI]	R	40	-2	-4	3474.35 [*]	
Posterior Insula [PI]	L	-40	2	-8	2029.61 [*]	
Amygdala	R	22	-4	-16	3549.12 [*]	
Amygdala	L	-22	-4	-20	3273.88 [*]	
Inferior Frontal Gyrus [IFG]	R	44	38	6	2040.99 [*]	
Inferior Frontal Gyrus [IFG]	L	-50	36	12	866.60 [†]	
Precentral Gyrus	R	50	8	20	1038.90 [†]	
Precentral Gyrus	L	-46	2	26	1468.67 [†]	
Supramarginal/Postcentral Gyrus [SMG/PCG]	R	62	-20	36	4141.25 [*]	
Supramarginal/Postcentral Gyrus [SMG/PCG]	L	-54	24	36	1503.63 [†]	33261
Intraparietal Sulcus	R	24	-62	52	3921.23 [*]	
Intraparietal Sulcus	L	-24	-58	54	3264.51 [*]	
Inferior Temporal Gyrus	R	48	-62	-10	11847.33 [*]	
Inferior Temporal Gyrus	L	-46	-64	-10	10987.75 [*]	
Middle Occipital Gyrus	R	34	-82	16	11166.37 [*]	
Middle Occipital Gyrus	L	-30	-88	14	8731.41 [*]	
Fusiform Gyrus	R	30	-56	-12	11616.96 [*]	
Fusiform Gyrus	L	-28	-54	-14	13705.47 [*]	
Occipital Pole	R	18	-94	-2	15702.10 [*]	
Occipital Pole	L	-14	-90	-10	11892.50 [*]	
Periaqueductal Gray/Midbrain	M	-8	-24	-8	2160.31 [*]	
dorsal Anterior Cingulate Cortex [dACC]	M	2	4	30	1596.42 [†]	1035
Supplementary Motor Area	M	10	14	70	799.50 [†]	558
Cohort 2, Main Effect: $PF > cPF$						
Middle Insula [MI]	R	42	-2	4	1664.05 [†]	595
Precentral Gyrus	R	50	8	24	606.15 [‡]	271
Middle Insula [MI]	L	-40	-6	2	1392.84 [‡]	
Precentral Gyrus	L	-44	4	22	1010.90 [‡]	2023
Amygdala	L	-24	-4	-22	717.93 [‡]	
Hippocampus	L	-22	-32	-10	665.56 [‡]	
Thalamus	L	-20	-16	4	464.08 [‡]	1
Middle Frontal Gyrus	R	46	40	10	536.18 [‡]	39
Middle Orbital Gyrus	L	-24	34	-14	465.36 [‡]	1
Supramarginal/Postcentral Gyrus [SMG/PCG]	L	-58	-24	24	4471.27 [*]	5585
Intraparietal Sulcus	L	-22	-64	48	1202.95 [†]	
Middle Cingulate Cortex	M	-2	8	30	651.15 [‡]	
Posterior Cingulate Cortex	M	2	-34	28	539.49 [‡]	1153
Supplementary Motor Area	M	-10	-2	42	590.92 [‡]	
Inferior Temporal Gyrus	R	52	-52	-14	2961.58 [*]	
Middle Occipital Gyrus	R	32	-82	14	8122.82 [*]	
Fusiform Gyrus	R	28	-48	-14	8517.36 [*]	13983
Occipital Pole	R	12	-86	-2	8857.29 [*]	
Intraparietal Sulcus	R	26	-58	50	2149.88 [*]	

Supramarginal/Postcentral Gyrus [SMG/PCG]	R	62	-22	38	3227.61*	
Inferior Temporal Gyrus	L	-48	-60	-10	2865.09	
Middle Occipital Gyrus	L	-26	-86	10	8059.38*	13983
Fusiform Gyrus	L	-28	-48	-14	7787.88*	
Occipital Pole	L	-18	-80	-8	11406.56*	

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ FWE corrected for multiple comparisons for the whole brain.

§ $p < 0.05$ Small Volume Corrected for multiple comparisons.

Supplementary Table S3

Handedness Task. Regions displaying differential activity for the contrast $PL > cPL$.

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Cohort 1, Main Effect: $PL > cPL$						
Anterior Insula [AI]	R	44	18	4	2249.70*	
Anterior Insula [AI]	L	-32	28	-4	2993.88*	
Dorsolateral Prefrontal Cortex [DLPFC]	R	28	10	50	3099.96*	
Dorsolateral Prefrontal Cortex [DLPFC]	L	-26	-2	48	4035.27*	
Superior Parietal Cortex	R	42	-40	48	3652.86*	
Superior Parietal Cortex	L	-32	-44	42	6027.10*	
Middle/Inferior Occipital Gyrus	R	50	-66	12	3210.74*	47910
Middle/Inferior Occipital Gyrus	L	-40	-70	14	3929.21*	
Cerebellum	L	-22	-54	-28	1194.81†	
Supplementary Motor Area [SMA]	M	-6	16	44	3922.09*	
posterior Middle Cingulate Cortex	M	-4	-22	30	2918.73*	
Precuneus	M	-8	-64	42	4681.45*	
Periaqueductal Gray/Midbrain	M	-4	-26	-14	1830.27‡	
dorsal Anterior Cingulate Cortex [dACC]	M	6	24	36	167.50§	101
Cerebellum	R	32	-62	-32	1033.48‡	190
Cohort 1, ($PL > cPL$)_{Med4} > ($PL > cPL$)_{Med1}						
Thalamus	R	8	-2	-2	879.36	37
Caudate	R	12	12	2	783.29‡	14
Cohort 2, Main Effect: $PL > cPL$						
Postcentral Gyrus	L	-40	-26	58	2176.32*	1337
Cohort 2, ($PL > cPL$)*Post-Graduate Experience						
Anterior Insula [AI]	L	-40	-18	-12	139.03§	39

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ FWE corrected for multiple comparisons for the whole brain.§ $p < 0.05$ Small Volume Corrected for multiple comparisons.

Supplementary Table S4

Handedness Task. Regions displaying suprathreshold activity for the interaction ($PF > cPF$) > ($PL > cPL$).

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Cohort 1, Main Effect: ($PF > cPF$) > ($PL > cPL$)						
Posterior Insula [PI]	R	42	-2	-4	1494.25 [†]	
Posterior Insula [PI]	L	-40	-2	-6	1585.82 [†]	
Amygdala	R	22	-4	-18	1391.57 [†]	
Amygdala	L	-22	-4	-22	2165.63 [*]	
Fusiform Gyrus	R	28	-48	-20	7901.24 [*]	
Occipital Pole	R	14	-94	8	10922.80 [*]	14931
Inferior Temporal/Occipital Gyrus	R	52	-60	-14	4158.35 [*]	
Fusiform Gyrus	L	-28	-56	-14	8248.71 [*]	
Occipital Pole	L	-20	-90	-14	8508.68 [*]	
Inferior Temporal/Occipital Gyrus	L	-44	-64	-8	3627.07 [*]	
Posterior Orbital Gyrus	R	30	32	-20	606.69 [‡]	32
Supramarginal/Postcentral Gyrus [SMG/PCG]	R	62	-20	28	1878.82 [†]	582
Middle Cingulate Cortex	M	2	4	32	572.57 [‡]	18
Ventromedial Prefrontal Cortex [VMPFC]	M	0	30	-26	546.25 [‡]	7
Cohort 1, $[(PF > cPF) > (PL > cPL)]_{Contr} > [(PF > cPF) > (PL > cPL)]_{Med4}$						
Anterior Insula [AI]	R	30	16	-18	149.49 [§]	17
Cohort 1, $[(PF > cPF) > (PL > cPL)]_{Med1} > [(PF > cPF) > (PL > cPL)]_{Med4}$						
Thalamus	R	8	-2	0	851.94 [‡]	33
Cohort 2, Main Effect: ($PF > cPF$) > ($PL > cPL$)						
Posterior Insula [PI]	R	42	-2	4	1046.45 [‡]	52
Amygdala	R	24	-4	-18	1722.79 [†]	250
Amygdala	L	-24	-2	-20	1367.57 [‡]	126
Inferior Frontal Gyrus [IFG]	R	48	40	10	930.19 [†]	13
Orbitofrontal Cortex	R	28	32	-18	967.11 [‡]	23
Precentral Gyrus	L	-46	2	30	1123.61 [‡]	160
Supramarginal/Postcentral Gyrus [SMG/PCG]	R	62	-22	32	2751.67 [†]	703
Supramarginal/Postcentral Gyrus [SMG/PCG]	L	-64	-24	28	1077.26 [‡]	39
Intraparietal Sulcus	R	24	-64	46	909.28 [‡]	8
Fusiform Gyrus	R	30	-46	-16	5563.85 [*]	
Occipital Pole	R	22	-84	-8	4575.34 [*]	
Inferior Temporal/Occipital Gyrus	R	52	-52	-12	2311.52 [†]	
Fusiform Gyrus	L	-28	-64	-8	5962.31 [*]	7925
Occipital Pole	L	-12	-88	-6	7562.57 [*]	
Inferior Temporal/Occipital Gyrus	L	-44	-56	-10	2816.50 [†]	
Cohort 2, $[(PF > cPF) > (PL > cPL)]$ * Post-Graduate Experience (negative effect)						
Anterior Insula [AI]	L	-42	16	-10	127.27 [§]	14

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ FWE corrected for multiple comparisons for the whole brain.

§ $p < 0.05$ Small Volume Corrected for multiple comparisons

Supplementary Table S5

Vicarious Pain Signature for Handedness Task. Results from Linear Mixed Model analysis with EMOTIONAL AROUSAL (*Neutral, Negative*) and STIMULI (*Painful, Painless*) as within-subjects factor. In Cohort 1, GROUP (*Controls Med1, Med4*) was modeled as between-subjects factor. In Cohort 2, postgraduate EXPERIENCE was modeled as continuous predictor. The *lmer-syntax* of the tested model is the following:

Cohort 1 – *Dep. Var. ~ EA*STIMULI*GROUP + (EA+STIMULI|Subjects)*.

Cohort 2 – *Dep. Var. ~ EA*STIMULI*EXP + (EA+STIMULI|Subjects)*.

Differently from behavioral measures, the analysis was not carried out on single-trial data, but on parameter-maps from first-level neuroimaging analysis, obtained by collapsing all trials of each condition/subject together. As such, we could not account for random effects of Materials. Furthermore, the model could be fit under a simplified random structure for the effect of subjects' identity. The analysis was run on the output of two Vicarious Pain models: *Krishnan₂₀₁₆* and *Zhou-NS₂₀₂₀*. For each of these, and for each effect of interest, the table reports the *t*-value associated with the model parameters. Significant effects are highlighted.

	<i>Krishnan₂₀₁₆</i>	<i>Zhou-NS₂₀₂₀</i>
<u>COHORT 1</u>		
EMOTIONAL AROUSAL [EA]	$t_{(79)} = -2.67^\ddagger$	$t_{(118)} = -2.55^\ddagger$
STIMULI	$t_{(76)} = -0.26$	$t_{(118)} = 0.15$
GROUP [GR]: <i>Contr. vs. Med1</i>	$t_{(42)} = 0.24$	$t_{(42)} = 0.28$
GROUP [GR]: <i>Contr. vs. Med4</i>	$t_{(42)} = -0.30$	$t_{(42)} = -0.70$
EA*STIMULI	$t_{(140)} = 1.21$	$t_{(120)} = 0.66$
EA*GR: <i>Contr. vs. Med1</i>	$t_{(79)} = 0.11$	$t_{(119)} = 1.23$
EA*GR: <i>Contr. vs. Med4</i>	$t_{(79)} = 0.06$	$t_{(118)} = -2.37^\ddagger$
STIMULI*GR: <i>Contr. vs. Med1</i>	$t_{(76)} = -0.98$	$t_{(118)} = -2.23^\ddagger$
STIMULI*GR: <i>Contr. vs. Med4</i>	$t_{(76)} = -0.95$	$t_{(118)} = -2.57^\ddagger$
EA*STIMULI*GR: <i>Contr. vs. Med1</i>	$t_{(40)} = 0.51$	$t_{(120)} = -1.18$
EA*STIMULI*GR: <i>Contr. vs. Med4</i>	$t_{(40)} = 0.32$	$t_{(118)} = -2.85^\ddagger$
<u>COHORT 2</u>		
EMOTIONAL AROUSAL [EA]	$t_{(64)} = -6.44^*$	$t_{(84)} = 1.44$
STIMULI	$t_{(63)} = -4.59^*$	$t_{(84)} = 4.50^*$
EXPERIENCE [EXP]	$t_{(29)} = 0.81$	$t_{(30)} = 0.23$
EA*STIMULI	$t_{(56)} = 6.03^*$	$t_{(84)} = -3.53^*$
EA*EXP	$t_{(84)} = 0.71$	$t_{(84)} = 0.31$
STIMULI*EXP	$t_{(79)} = -1.51$	$t_{(79)} = 0.71$
EA*STIMULI*EXP	$t_{(84)} = 0.06$	$t_{(84)} = -1.76$

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$

Supplementary Table S6

Cognitive and Affective Theory of Mind Task. Results from (Generalized) Linear Mixed Model analysis with STORY CATEGORY (*B, E, Pa, Ph*) as within-subjects factor. In Cohort 1, GROUP (*Controls Med1, Med4*) was modeled as between-subjects factor. In Cohort 2, postgraduate EXPERIENCE was modeled as continuous predictor. The *lmer-syntax* of the tested model is the following:

Cohort 1 – *Dep. Var. ~ STORY*GROUP + (STORY|Subjects) + (GROUP|Materials)*.

Cohort 2 – *Dep. Var. ~ STORY*EXP + (STORY|Subjects) + (EXP|Materials)*.

The analysis was run on Accuracy and Reaction Times of correct responses. For each dependent variable (displayed vertically), and for each effect of interest (horizontally), the table reports the Z/t-value associated with the model parameters.

	Accuracy	RTs [sec]
<u>COHORT 1</u>		
STORY CATEGORY [SC]: <i>Photos [Ph] vs. Beliefs [B]</i>	Z = 1.21	$t_{(46)} = -0.43$
SC: <i>Ph vs. Emotions [E]</i>	Z = 0.79	$t_{(51)} = 0.61$
SC: <i>Ph vs. Pain [Pa]</i>	Z = 0.88	$t_{(47)} = 1.64$
GROUP [GR]: <i>Contr. vs. Med1</i>	Z = -0.34	$t_{(43)} = 1.18$
GROUP [GR]: <i>Contr. vs. Med4</i>	Z = 0.62	$t_{(43)} = 1.03$
SC*GR: (<i>Ph vs. B</i>)*(<i>Contr. vs. Med1</i>)	Z = 1.11	$t_{(41)} = -0.69$
SC*GR: (<i>Ph vs. E</i>)*(<i>Contr. vs. Med1</i>)	Z = -0.88	$t_{(39)} = 0.56$
SC*GR: (<i>Ph vs. Pa</i>)*(<i>Contr. vs. Med1</i>)	Z = 0.61	$t_{(40)} = 0.29$
SC*GR: (<i>Ph vs. B</i>)*(<i>Contr. vs. Med4</i>)	Z = 0.30	$t_{(40)} = -0.96$
SC*GR: (<i>Ph vs. E</i>)*(<i>Contr. vs. Med4</i>)	Z = -0.31	$t_{(39)} = -0.05$
SC*GR: (<i>Ph vs. Pa</i>)*(<i>Contr. vs. Med4</i>)	Z = 0.63	$t_{(39)} = -0.35$
<u>COHORT 2</u>		
STORY CATEGORY [SC]: <i>Photos [Ph] vs. Beliefs [B]</i>	Z = 1.28	$t_{(44)} = -0.65$
SC: <i>Ph vs. Emotions [E]</i>	Z = 0.05	$t_{(43)} = 0.66$
SC: <i>Ph vs. Pain [Pa]</i>	Z = 1.12	$t_{(48)} = 1.88$
EXPERIENCE [EXP]	Z = 1.18	$t_{(26)} = 0.50$
SC*EXP: (<i>Ph vs. B</i>)	Z = -0.12	$t_{(37)} = 0.72$
SC*EXP: (<i>Ph vs. E</i>)	Z = -0.46	$t_{(89)} = 1.37$
SC*EXP: (<i>Ph vs. Pa</i>)	Z = -1.07	$t_{(27)} = 0.55$

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$

Supplementary Table S7

Cognitive and Affective Theory of Mind Task. Regions displaying suprathreshold activity evoked by the attribution of *beliefs* while reading the text-based *Scenarios*.

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Cohort 1, Main Effect: Attribution of Beliefs						
Temporo-Parietal Junction [TPJ]	R	58	-54	28	9136.88*	
Middle Temporal Gyrus	R	58	-28	-8	3028.99 [†]	
Dorsolateral Prefrontal Cortex [DLPFC]	R	40	20	36	2591.07 [†]	
Dorsolateral Prefrontal Cortex [DLPFC]	L	-40	18	40	1967.04 [†]	18590
Inferior Frontal Gyrus	R	50	28	-10	1576.62 [‡]	
Medial Prefrontal Cortex (<i>dorsal part</i>)	M	4	42	44	5157.80*	
Medial Prefrontal Cortex (<i>rostral part</i>)	M	2	60	12	6921.89*	
Temporo-Parietal Junction [TPJ]	L	-54	-60	26	6317.21*	1980
Middle Temporal Gyrus	L	-62	-22	-14	3936.84 [†]	569
Temporal Pole	L	-46	8	-36	450.50 [‡]	109
Inferior Frontal Gyrus	L	-40	22	-22	613.81 [‡]	344
Temporal Pole	L	-34	16	-28	451.29 [‡]	
Caudate	R	14	2	12	438.55 [‡]	
Caudate	L	-10	10	2	553.20 [‡]	
Precuneus	M	2	-60	38	17576.89*	6898
Posterior Cingulate Cortex	M	-6	-46	6	840.03 [†]	
Thalamus	M	0	-4	4	463.94 [‡]	
Cohort 2, Main Effect: Attribution of Beliefs						
Temporo-Parietal Junction [TPJ]	R	50	-52	22	1280.61 [‡]	225
Precuneus	M	-4	-58	38	1775.65 [†]	663

* $p < 0.001$; [†] $p < 0.01$; [‡] $p < 0.05$ corrected for multiple comparisons at the cluster level for the whole.

Supplementary Table S8

Cognitive and Affective Theory of Mind Task. Regions displaying suprathreshold activity evoked by the attribution of *emotions* while reading the text-based *Scenarios*.

	SIDE	Coordinates			TFCE	Cluster size	
		x	y	z			
Cohort 1, Main Effect: Attribution of Emotions							
Middle-Posterior Insula	R	40	2	10	1927.11*		
Middle-Posterior Insula	L	-34	2	8	2640.99*		
Medial Prefrontal Cortex (<i>ventral part</i>)	M	-4	34	-8	2068.62*		
Superior Temporal Gyrus	R	66	-14	0	1252.68 [†]		
Superior Temporal Gyrus	L	-56	-4	14	3145.19*		
Middle Cingulate Cortex	M	-2	-16	40	1932.39*		
Precentral Gyrus	R	50	-4	52	1387.84 [†]		
Postcentral Gyrus	R	38	-30	58	2759.07*		
Postcentral Gyrus	L	-36	-28	56	2568.22*		
Supramarginal Gyrus	R	62	-30	20	3053.89*	48875	
Supramarginal Gyrus	L	-58	-28	22	2804.15*		
Intraparietal Sulcus	R	20	-48	64	3113.26*		
Intraparietal Sulcus	L	-18	-50	62	2385.48*		
Inferior Temporal/Occipital Gyrus	R	50	-70	-2	2915.07*		
Inferior Temporal/Occipital Gyrus	L	-48	-68	4	2369.84*		
Fusiform Gyrus	R	38	-54	-16	2979.78*		
Occipital Pole	R	22	-90	16	3548.23*		
Occipital Pole	L	-38	-86	0	3338.35*		
Cerebellum	R	30	-58	-24	3408.53*		
Cerebellum	L	-8	-60	-14	1995.78*		
Temporal Pole	R	28	10	-22	983.81 [‡]		141
Precentral Gyrus	L	-52	-4	44	886.74 [‡]		123
Cohort 2, Main Effect: Attribution of Emotions							
Posterior Insula [PI]	R	40	-4	4	976.60 [‡]		257
Superior Temporal Gyrus	R	64	-34	18	1178.21 [‡]		1050
Supramarginal Gyrus	R	62	-20	42	1240.44 [‡]		
Anterior Insula [AI]	L	-36	6	4	1214.95 [‡]	2175	
Superior Temporal Gyrus	L	-56	-8	-4	1542.96 [‡]		
Parietal Operculum	L	-52	-38	24	1091.44 [‡]		
Medial Prefrontal Cortex (<i>ventral part</i>)	M	4	40	6	1391.21 [‡]	684	
Precuneus	M	10	-44	62	1054.36 [‡]	972	
Precentral Gyrus	R	28	-16	74	1250.19 [‡]		
Postcentral Gyrus	R	46	-16	62	963.97 [‡]	1	
Precentral Gyrus	L	-18	-20	76	1313.71 [‡]	3287	
Postcentral Gyrus	L	-18	-46	72	1523.69 [†]		
Middle Cingulate Cortex	M	-4	-18	40	1308.80 [‡]		

* $p < 0.001$; [†] $p < 0.01$; [‡] $p < 0.05$ corrected for multiple comparisons at the cluster level for the whole.

Supplementary Table S9

Cognitive and Affective Theory of Mind Task. Regions displaying suprathreshold activity evoked by the attribution of *pain* while reading the text-based *Scenarios*.

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Cohort 1, Main Effect: Attribution of Pain						
Posterior Insula [PI]	R	40	2	-10	883.03 [‡]	218
Anterior Insula [AI]	R	48	14	-2	651.75 [‡]	
Posterior Insula [PI]	L	-38	-14	-6	1143.43 [‡]	369
Anterior Insula [AI]	L	-36	12	-2	955.16 [‡]	
Supramarginal/Postcentral Gyrus	L	-56	-36	52	3591.43 [*]	1536
Supramarginal/Postcentral Gyrus	R	60	-36	36	2631.26 [†]	806
Inferior Frontal Gyrus	R	44	42	2	2341.26 [†]	416
Dorsolateral Prefrontal Cortex	L	-26	34	46	1445.24 [†]	
Inferior Frontal Gyrus	L	-46	40	8	3649.57 [*]	
Posterior Orbital Gyrus	L	-24	30	-14	6272.60 [*]	18229
Precuneus	M	-2	-74	46	5097.21 [*]	
Posterior Cingulate Cortex	M	-8	-30	40	8757.16 [*]	
Middle Cingulate Cortex [MCC]	M	-4	2	36	5374.55 [*]	
Medial Prefrontal Cortex (<i>ventral part</i>)	M	4	50	-6	1326.54 [†]	
Cohort 1, Pain_{Contr} > Pain_{Med4}						
Anterior Insula [AI]	R	42	16	-4	205.90 [§]	131

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ corrected for multiple comparisons at the cluster level for the whole.

§ $p < 0.05$ Small Volume Corrected for multiple comparisons.

Supplementary Table S10

Cognitive and Affective Theory of Mind Task. Regions displaying suprathreshold activity evoked by making active *judgment* about *beliefs & emotions*, compared to the control *photos* condition.

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Cohort 1, Main Effect: Beliefs > Photos Judgment						
Temporo-Parietal Junction [TPJ]	R	52	-48	16	956.38 [‡]	182
Middle Temporal Gyrus	R	60	-24	-10	1318.29 [‡]	117
Precuneus	M	6	-60	34	6314.94 [*]	4520
Posterior Cingulate Cortex	M	-2	-20	32	929.46 [‡]	
Cohort 2, Main Effect: Beliefs > Photos Judgment						
Precuneus	M	0	-52	32	1577.45 [‡]	491
Cohort 1, Main Effect: Emotions > Photos Judgment						
Precuneus	M	2	-68	36	1259.75 [‡]	938
Posterior Cingulate Cortex	M	-2	-48	30	2608.71 [*]	
Middle Cingulate Cortex	M	2	-14	40	1837.41 [‡]	477
Medial Prefrontal Cortex (<i>dorsal part</i>)	M	-10	62	26	1904.68 [‡]	570
Fusiform Gyrus	L	-34	-54	-20	1172.38 [‡]	79
Inferior Frontal Gyrus	L	-42	22	-20	1114.92 [‡]	136
Amygdala	L	-20	0	-14	890.48 [‡]	29
Putamen	L	-16	14	0	964.23 [‡]	103
Cohort 1, (Emotions > Photos)_{Med1} > (Emotions > Photos)_{Med4} Judgment						
dorsal Anterior Cingulate Cortex [dACC]	M	0	36	28	97.87 [§]	8
Cohort 1, Main Effect: Pain > Photos Judgment						
Posterior Insula [PI]	R	40	-8	-10	1494.14 [‡]	
Posterior Insula [PI]	L	-36	-8	-10	1485.93 [‡]	
Anterior Insula [AI]	R	42	4	-4	1598.48 [‡]	
Anterior Insula [AI]	L	-36	8	-4	1332.05 [‡]	
Putamen	R	20	12	-6	1879.08 [*]	
Putamen	L	-18	12	-10	2287.48 [*]	14426
Precentral Gyrus	L	-38	-14	56	1486.51 [‡]	
Supramarginal/Postcentral Gyrus	R	66	-34	20	1168.58 [‡]	
Supramarginal/Postcentral Gyrus	L	-64	-30	22	1458.14 [‡]	
Middle Cingulate Cortex	M	6	-20	34	1469.19 [‡]	
Supplementary Motor Area	M	10	6	62	1185.37 [‡]	
Precentral Gyrus	R	46	-4	48	786.33 [‡]	10
Lingual Gyrus	R	18	-70	0	2183.70 [*]	
Lingual Gyrus	L	10	-60	2	1047.87 [‡]	
Fusiform Gyrus	R	34	-58	-20	2068.63 [*]	
Fusiform Gyrus	L	-34	-58	-18	1327.94 [‡]	
Inferior Occipital Gyrus	R	40	-76	6	1983.60 [*]	
Inferior Occipital Gyrus	L	-46	-76	-2	1553.54 [‡]	12188
Superior Occipital Gyrus	R	28	-80	32	2016.36 [*]	
Superior Occipital Gyrus	L	-28	-82	24	1284.39 [‡]	
Superior Parietal Cortex	R	16	-72	48	1963.29 [*]	
Superior Parietal Cortex	L	-12	-60	58	1019.07 [‡]	
Thalamus	R	10	-24	-2	1051.05 [‡]	

Thalamus	L	-10	-24	0	997.60 [‡]
Precuneus	M	16	-72	36	1926.88 [*]

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ corrected for multiple comparisons at the cluster level for the whole.

§ $p < 0.05$ Small Volume Corrected for multiple comparisons.

Supplementary Table S11

Representational Similarity Analysis. Regions encoding pain-specific information in the two cohorts (within-pain vs. across-affect).

	<i>SIDE</i>	<i>Coordinates</i>			<i>TFCE</i>	<i>Cluster size</i>
		<i>x</i>	<i>y</i>	<i>z</i>		
<i>Cohort 1, Main effect</i>						
Inferior Frontal Gyrus [IFG]	R	48	36	0	1761.90 [†]	790
Anterior Insula [AI]	L	-32	24	8	1384.81 [‡]	
Inferior Frontal Gyrus [IFG]	L	-42	36	10	2055.33 [†]	2325
Orbitofrontal Cortex	L	-22	34	-10	2426.10 [*]	
Middle Insula [MI]	M	-40	6	2	1197.04 [‡]	619
<i>Cohort 2, Main effect</i>						
Hippocampus [Hipp]	R	32	-10	-20	1217.10 [‡]	
Amygdala [Amy]	R	24	-6	-22	1217.10 [‡]	727
Putamen	R	28	-10	-8	1248.20 [‡]	
Temporal Pole	R	48	0	-38	1317.69 [‡]	
Hippocampus [Hipp]	L	-20	-14	-22	1263.41 [‡]	357
Amygdala [Amy]	L	-18	-8	-16	1229.51 [‡]	
Superior Frontal Gyrus	R	24	12	60	1230.61 [‡]	282
dorsal Anterior Cingulate Cortex [dACC]	M	0	34	14	117.03 [§]	20
Supplementary Motor Area	M	4	24	54	1201.56 [‡]	109
Cerebellum	R	26	-76	-38	1351.70 [‡]	317

* $p < 0.001$; † $p < 0.01$; ‡ $p < 0.05$ FWE corrected for multiple comparisons for the whole brain.

§ $p < 0.05$ Small Volume Corrected for multiple comparisons.

Supplementary Table S12

Quantitative comparison between Cohorts 1 & 2: Behavioral results from the Handedness Task. Results from (Generalized) Linear Mixed Model analysis with EMOTIONAL AROUSAL (*Neutral, Negative*) and STIMULI (*Painful, Painless*) as within-subjects factor, and GROUP (*Controls Med1, Med4, Nurses*) as between-subjects factor. The *lmer-syntax* of the tested model is the following:

*Dep. Var. ~ EA*STIMULI*GROUP + EA*STIMULI*AGE + (EA*STIMULI|Subjects) + (GROUP + AGE|Materials).*

As cohort 1 included only females, this analysis was carried out by including only the females from cohort 2. Furthermore, as cohort 2 underwent overall shorter version of the paradigm we considered only a sub-selection of the data (120 trials out of 180) from cohort 1 in order to match the two datasets. For each dependent variable (displayed vertically), and for each effect of interest (horizontally), the table reports the Z/t-value associated with the model parameters. Significant effects are highlighted

	Accuracy	RTs [sec]	Arousal [1; 10]	Valence [-4; 4]	Pain [1; 10]	Familiarity [1; 10]
EMOTIONAL AROUSAL [EA]	Z = -3.65*	t ₍₁₁₉₎ = 2.57[‡]	t ₍₈₂₎ = 9.87*	t ₍₁₀₇₎ = -7.91*	t ₍₇₅₎ = -13.52*	t ₍₁₀₂₎ = -3.97*
STIMULI	Z = -1.25	t ₍₁₁₅₎ = 1.25	t ₍₁₁₁₎ = 1.74	t ₍₁₃₆₎ = 2.51[‡]	t ₍₁₂₉₎ = -0.28	t ₍₁₀₅₎ = 1.34
GROUP [GR]: Contr. vs. Med1	Z = 0.02	t ₍₆₂₎ = 0.86	t ₍₅₈₎ = 1.24	t ₍₅₈₎ = 1.26	t ₍₅₈₎ = 0.48	t ₍₆₀₎ = 1.11
GROUP [GR]: Contr. vs. Med4	Z = 0.56	t ₍₅₈₎ = 0.51	t ₍₆₀₎ = -0.20	t ₍₆₃₎ = 0.99	t ₍₅₈₎ = 0.92	t ₍₆₁₎ = 4.28*
GROUP [GR]: Contr. vs. Nurses	Z = -1.54	t ₍₅₉₎ = 0.90	t ₍₆₀₎ = 0.04	t ₍₆₂₎ = 1.22	t ₍₆₁₎ = 2.64[‡]	t ₍₆₆₎ = 5.02*
AGE	Z = 1.26	t ₍₆₁₎ = 0.38	t ₍₅₉₎ = -0.52	t ₍₅₉₎ = -0.21	t ₍₅₉₎ = -0.65	t ₍₆₀₎ = 0.87
EA*STIMULI	Z = 0.31	t ₍₁₂₂₎ = -0.33	t ₍₈₈₎ = -4.82*	t ₍₁₂₉₎ = 0.65	t ₍₇₂₎ = -8.04*	t ₍₁₂₂₎ = 0.20
EA*GR: Contr. vs. Med1	Z = 1.22	t ₍₇₂₎ = -1.41	t ₍₅₉₎ = -2.49[‡]	t ₍₅₉₎ = -0.01	t ₍₅₉₎ = -0.84	t ₍₆₀₎ = 0.66
EA*GR: Contr. vs. Med4	Z = 0.55	t ₍₆₁₎ = -1.93	t ₍₆₁₎ = -1.92	t ₍₆₄₎ = 1.06	t ₍₅₈₎ = -0.62	t ₍₆₃₎ = -0.88
EA*GR: Contr. vs. Nurses	Z = 1.60	t ₍₆₄₎ = -1.49	t ₍₆₁₎ = -0.01	t ₍₆₂₎ = 1.17	t ₍₆₂₎ = -1.10	t ₍₇₃₎ = -1.04
STIMULI*GR: Contr. vs. Med1	Z = 0.33	t ₍₁₀₄₎ = 0.67	t ₍₅₉₎ = 0.07	t ₍₆₀₎ = -1.50	t ₍₅₉₎ = -0.66	t ₍₆₀₎ = -0.23
STIMULI*GR: Contr. vs. Med4	Z = 0.27	t ₍₂₇₉₎ = -1.85	t ₍₆₄₎ = 1.35	t ₍₇₀₎ = -2.24[‡]	t ₍₅₉₎ = -1.17	t ₍₆₃₎ = -4.57*
STIMULI*GR: Contr. vs. Nurses	Z = 0.94	t ₍₂₁₃₎ = -2.34[‡]	t ₍₆₄₎ = 1.51	t ₍₆₇₎ = -2.02[‡]	t ₍₇₄₎ = -1.46	t ₍₇₃₎ = -4.64*
EA*AGE	Z = -0.87	t ₍₇₀₎ = 1.27	t ₍₆₀₎ = -2.21[‡]	t ₍₅₉₎ = 0.49	t ₍₅₉₎ = -0.27	t ₍₆₁₎ = 1.02
STIMULI*AGE	Z = -0.92	t ₍₁₀₉₎ = 2.09[‡]	t ₍₆₁₎ = -0.13	t ₍₆₀₎ = -0.75	t ₍₆₀₎ = 0.41	t ₍₆₁₎ = -0.55
EA*STIM*GR: Contr. vs. Med1	Z = -0.48	t ₍₇₇₎ = 1.46	t ₍₆₀₎ = 1.67	t ₍₅₉₎ = -0.33	t ₍₅₈₎ = 0.57	t ₍₆₁₎ = -0.86
EA*STIM*GR: Contr. vs. Med4	Z = -0.46	t ₍₆₆₎ = 2.17[‡]	t ₍₆₂₎ = 1.62	t ₍₆₈₎ = -0.67	t ₍₅₈₎ = 0.15	t ₍₆₄₎ = 0.91
EA*STIM*GR: Contr. vs. Nurses	Z = -0.36	t ₍₇₀₎ = 0.30	t ₍₆₂₎ = 1.92	t ₍₆₅₎ = -2.12[‡]	t ₍₆₁₎ = 1.47	t ₍₈₀₎ = 1.18
EA*STIM*AGE	Z = 0.37	t ₍₇₅₎ = -0.38	t ₍₆₀₎ = 1.18	t ₍₅₉₎ = 0.13	t ₍₅₉₎ = -0.06	t ₍₆₂₎ = -1.47

* $p < 0.001$; [‡] $p < 0.01$; [‡] $p < 0.05$

Supplementary Table S13

Quantitative comparison between Cohorts 1 & 2: Cognitive and Affective Theory of Mind Task. Results from (Generalized) Linear Mixed Model analysis with STORY CATEGORY (*B, E, Pa, Ph*) as within-subjects factor, and GROUP (*Controls Med1, Med4, Nurses*) as between-subjects factor. The *lmer-syntax* of the tested model is the following:

*Dep. Var. ~ STORY*GROUP + STORY*AGE + (STORY|Subjects) + (GROUP + AGE|Materials).*

As cohort 1 included only females, this analysis was carried out by including only the females from cohort 2. As cohort 2 underwent only one session, we included only the first session (out of two) from cohort 1 in order to match the two datasets. The analysis was run on Accuracy and Reaction Times of correct responses. For each dependent variable (displayed vertically), and for each effect of interest (horizontally), the table reports the *Z/t*-value associated with the model parameters.

	Accuracy	RTs [sec]
<i>STORY CATEGORY [SC]: Photos [Ph] vs. Beliefs [B]</i>	<i>Z = 0.53</i>	<i>t₍₄₄₎ = -0.20</i>
<i>SC: Ph vs. Emotions [E]</i>	<i>Z = 0.47</i>	<i>t₍₄₄₎ = 0.35</i>
<i>SC: Ph vs. Pain [Pa]</i>	<i>Z = 0.35</i>	<i>t₍₄₃₎ = 1.49</i>
<i>GROUP [GR]: Contr. vs. Med1</i>	<i>Z = 0.56</i>	<i>t₍₅₆₎ = 1.06</i>
<i>GROUP [GR]: Contr. vs. Med4</i>	<i>Z = 0.74</i>	<i>t₍₅₈₎ = 0.94</i>
<i>GROUP [GR]: Contr. vs. Nurses</i>	<i>Z = -1.04</i>	<i>t₍₅₅₎ = 0.44</i>
<i>AGE</i>	<i>Z = 0.86</i>	<i>t₍₅₅₎ = 0.54</i>
<i>SC*GR: (Ph vs. B)*(Contr. vs. Med1)</i>	<i>Z = -0.11</i>	<i>t₍₄₅₎ = -0.34</i>
<i>SC*GR: (Ph vs. E)*(Contr. vs. Med1)</i>	<i>Z = -1.17</i>	<i>t₍₄₃₎ = 1.80</i>
<i>SC*GR: (Ph vs. Pa)*(Contr. vs. Med1)</i>	<i>Z = -0.74</i>	<i>t₍₄₄₎ = 0.32</i>
<i>SC*GR: (Ph vs. B)*(Contr. vs. Med4)</i>	<i>Z = -0.07</i>	<i>t₍₃₇₎ = -1.26</i>
<i>SC*GR: (Ph vs. E)*(Contr. vs. Med4)</i>	<i>Z = -0.31</i>	<i>t₍₃₇₎ = -0.19</i>
<i>SC*GR: (Ph vs. Pa)*(Contr. vs. Med4)</i>	<i>Z = -0.19</i>	<i>t₍₃₅₎ = -0.11</i>
<i>SC*GR: (Ph vs. B)*(Contr. vs. Nurses)</i>	<i>Z = 0.49</i>	<i>t₍₅₉₎ = -0.04</i>
<i>SC*GR: (Ph vs. E)*(Contr. vs. Nurses)</i>	<i>Z = 0.28</i>	<i>t₍₅₆₎ = 0.15</i>
<i>SC*GR: (Ph vs. Pa)*(Contr. vs. Nurses)</i>	<i>Z = 0.61</i>	<i>t₍₅₉₎ = -0.24</i>
<i>SC*Age: (Ph vs. B)</i>	<i>Z = -0.60</i>	<i>t₍₆₁₎ = 0.35</i>
<i>SC*Age: (Ph vs. E)</i>	<i>Z = -0.84</i>	<i>t₍₆₀₎ = 0.50</i>
<i>SC*Age: (Ph vs. Pa)</i>	<i>Z = -0.47</i>	<i>t₍₆₁₎ = 0.58</i>

**p < 0.001; †p < 0.01; ‡p < 0.05*

Supplementary Table S14

Quantitative comparison between Cohorts 1 & 2: neuroimaging analysis. Follow-up analysis obtained by combining data from the two cohorts together by assessing effect of healthcare training in terms of four-level GROUP (*Controls, Med1, Med4, Nurses*). As cohort 1 included only females, this analysis was carried out by including only the females from Cohort 2. Furthermore, as cohort 2 underwent overall shorter version of the paradigms we considered only a sub-selection of the data from cohort 1 in order to match the two experiments in terms of power. For the “Handedness” task, we included only those 120 trials (out of 180) which were used in both experiments. For the “Cognitive and Affective Theory of Mind” task, we used data only of the first run in chronological order. Finally, group-level analyses were carried out by including age as nuisance variable of no interest.

	SIDE	Coordinates			TFCE	Cluster size
		x	y	z		
Handedness Task: $(PF > cPF)_{Contr} > (PF > cPF)_{Nurses}$						
Anterior Insula [AI]	R	28	10	-18	116.41 [§]	1
Handedness Task: $(PF > cPF)_{Med1} > (PF > cPF)_{Nurses}$						
Anterior Insula [AI]	R	32	10	-16	62.65 [§]	5
Handedness Task: $[(PF > cPF) > (PL > cPL)]_{Contr} > [(PF > cPF) > (PL > cPL)]_{Med4}$						
Anterior Insula [AI]	R	28	16	-14	146.93 [§]	13
Cognitive and Affective Theory of Mind Task: Attribution of Pain $_{Contr} > Pain_{Nurses}$						
Anterior Insula	R	44	16	-2	214.68 [§]	104

§ $p < 0.05$ Small Volume Corrected for multiple comparisons

Supplementary Table S15

Quantitative comparison between Cohorts 1 & 2: Vicarious Pain Signature for Handedness Task. Results from Linear Mixed Model analysis with EMOTIONAL AROUSAL (*Neutral, Negative*) and STIMULI (*Painful, Painless*) as within-subjects factor, and GROUP (*Controls Med1, Med4, Nurses*) was modeled as between-subjects factor. The *lmer-syntax* of the tested model is the following:

*Dep. Var. ~ EA*STIMULI*GROUP + EA*STIMULI*AGE + (EA+STIMULI|Subjects).*

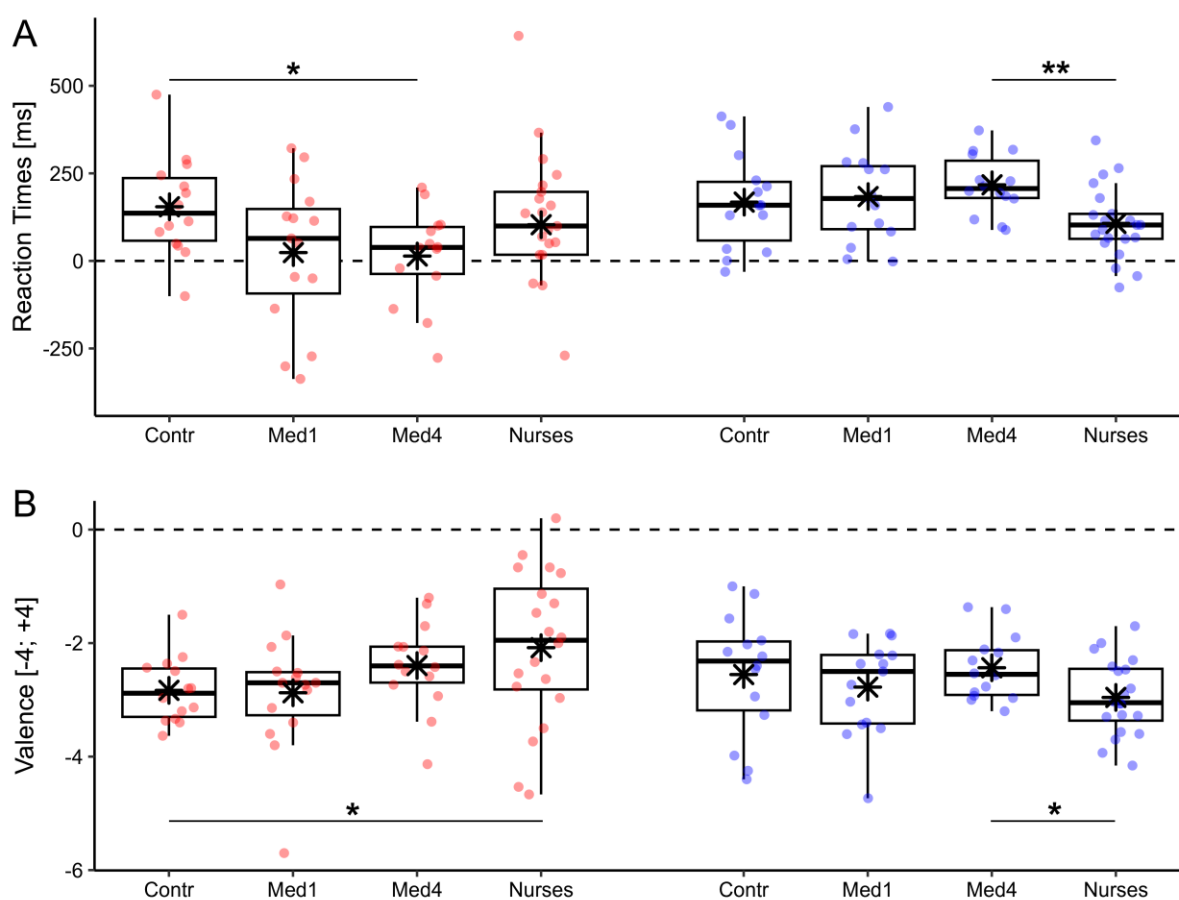
As cohort 1 included only females, this analysis was carried out by including only the females from cohort 2. Furthermore, as cohort 2 underwent overall shorter version of the paradigms we considered only a sub-selection of the data from cohort 1 in order to match the two experiments in terms of power.

	<i>Krishnan</i> ₂₀₁₆	<i>Zhou-NS</i> ₂₀₂₀
EMOTIONAL AROUSAL [EA]	$t_{(105)} = -4.39^*$	$t_{(161)} = -3.31^\dagger$
STIMULI	$t_{(105)} = -2.53^\ddagger$	$t_{(164)} = -1.25$
GROUP [GR]: <i>Contr. vs. Med1</i>	$t_{(58)} = 0.35$	$t_{(59)} = -0.08$
GROUP [GR]: <i>Contr. vs. Med4</i>	$t_{(58)} = -0.18$	$t_{(59)} = -1.55$
GROUP [GR]: <i>Contr. vs. Nurses</i>	$t_{(58)} = -1.73$	$t_{(59)} = 0.09$
Age	$t_{(58)} = 0.50$	$t_{(59)} = 0.13$
EA*STIMULI	$t_{(55)} = 3.34^\dagger$	$t_{(165)} = 1.22$
EA*GR: <i>Contr. vs. Med1</i>	$t_{(105)} = 1.29$	$t_{(161)} = 1.53$
EA*GR: <i>Contr. vs. Med4</i>	$t_{(105)} = 0.08$	$t_{(161)} = 3.68^*$
EA*GR: <i>Contr. vs. Nurses</i>	$t_{(105)} = 0.12$	$t_{(161)} = 2.58^\ddagger$
STIMULI*GR: <i>Contr. vs. Med1</i>	$t_{(105)} = 0.01$	$t_{(164)} = 2.88^\dagger$
STIMULI*GR: <i>Contr. vs. Med4</i>	$t_{(105)} = -0.13$	$t_{(164)} = 3.70^*$
STIMULI*GR: <i>Contr. vs. Nurses</i>	$t_{(105)} = 0.04$	$t_{(164)} = 1.44$
EA*AGE	$t_{(105)} = 0.84$	$t_{(161)} = -0.62$
STIMULI*AGE	$t_{(105)} = -0.69$	$t_{(164)} = 0.46$
EA*STIMULI*GR: <i>Contr. vs. Med1</i>	$t_{(55)} = -0.43$	$t_{(165)} = -1.67$
EA*STIMULI*GR: <i>Contr. vs. Med4</i>	$t_{(55)} = 0.24$	$t_{(165)} = -3.66^*$
EA*STIMULI*GR: <i>Contr. vs. Nurses</i>	$t_{(55)} = 0.29$	$t_{(165)} = -1.23$
EA*STIMULI*AGE	$t_{(55)} = -0.25$	$t_{(165)} = -0.59$

* $p < 0.001$; $^\dagger p < 0.01$; $^\ddagger p < 0.05$

Supplementary Figure S1

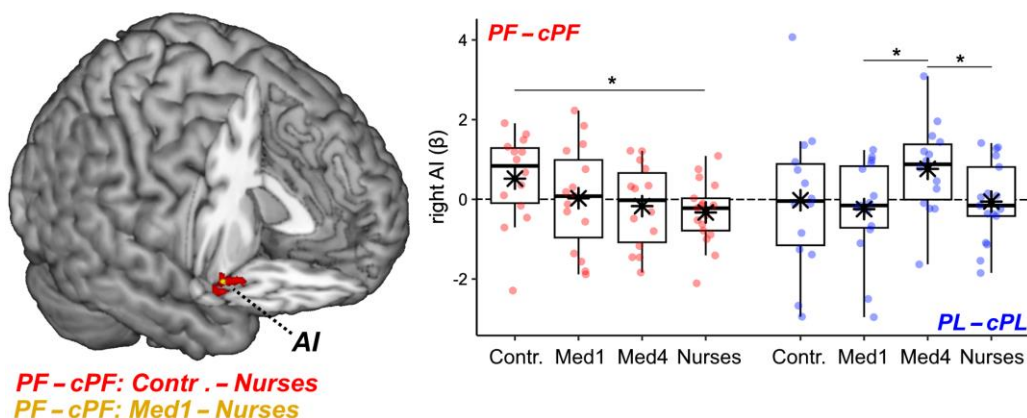
Quantitative comparison between Cohorts 1 & 2: Behavioral results from the Handedness Task. Boxplots displaying (A) Response Times of correct responses and (B) post-scanning Valence. Both variables are displayed as differential values between emotional condition and its neutral control. For each boxplot, the horizontal line represents the median value of the distribution, the star represents the average, the box edges refer to the inter-quartile range, and the whiskers represent the data range within 1.5 of the inter-quartile range. Individual data-points are also displayed color coded, with red dots referring to *PF/cPF* stimuli, and blue dots to *NPL/cNPL* stimuli. *Contr.*: Controls; *Med1* & *Med4*: university students enrolled at the first/fourth year of medicine. “***” and “*” refer to significant group differences as tested through linear mixed models (see methods) at $p < 0.001$ and $p < 0.05$ respectively.



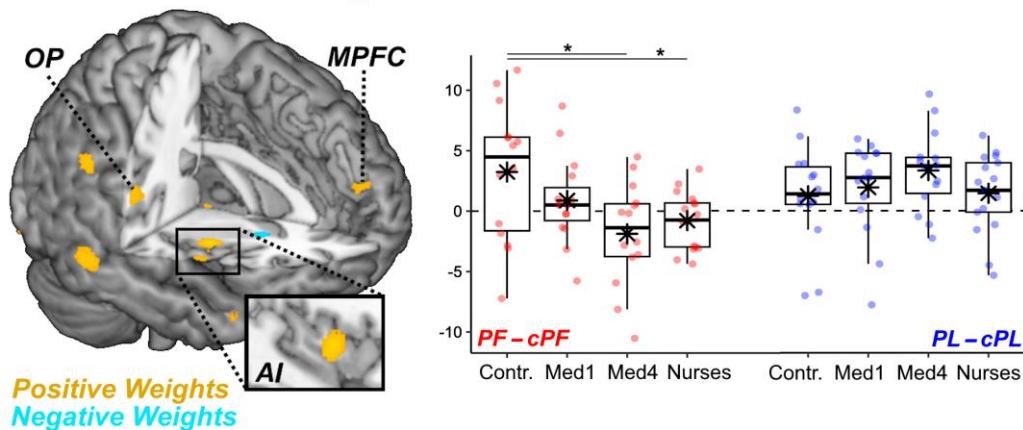
Supplementary Figure S2

Adaptation Figure 2 (A), Figure 3 (B) and Figure 4 (B) from the main text to allow for a quantitative comparison between cohorts. As cohort 1 included only females, this analysis was carried out by including only the females from Cohort 2. Furthermore, as cohort 2 underwent overall shorter version of the paradigms we considered only a sub-selection of the data from cohort 1 in order to match the two experiments in terms of power. Renderings are displayed under the same threshold than in the main text. The only exception is subplot A which, for readability purposes, is displayed under $p < 0.001$ (uncorrected), with regions local maxima surviving FWE $p < 0.05$ correction.

A Handedness Task



B Vicarious Pain Signatures



C Cognitive and Affective Theory of Mind

