Supplemental information

Supplementary Results

Influence of pre- and post-assessment interval

To formally check for potential influences of time between pre-and post-assessment. we ran two post-hoc regression analyses on the extracted beta-values from the left aPFC cluster (xyz -40, 58, 4, contrast: delta-PCL x time [follow-up vs. baseline] x congruency [incongruent > congruent], see table S2) and amygdala cluster (L xyz -28, -2, -16; R xyz 22, 2, -20, contrast: Δ-PLES x time [follow-up vs. baseline] x congruency [incongruent > congruent], see table S2):

1. Symptom increase (Δ-PCL) ~ [Left aPFC congruency effect wave 2 > wave 1] + symptoms at baseline + trauma load at baseline + trauma load increase + interval length

The relationship between the left aPFC congruency effect at baseline and symptom increase remained significant (*B* = 0.19, *p* = 0.001) and interval length did not predict change in PTSD symptoms (*B* = 0.09, *p* = 0.24)

2. [Bilateral amygdala congruency effect wave 2 > wave 1] ~ trauma load at baseline + trauma load increase + symptom increase + symptoms at baseline + interval length

Also here, the relationship between trauma load increase and the amygdala congruency effect remained significant (*B* = 0.36, *p* = 0.002) and interval length did not predict the change in amygdala congruency effect (*B* = -0.36, *p* = 0.48).

Potential moderating effect of amygdala activation

Additionally, we conducted a moderation analysis on the beta-values (incongruent>congruent contrast) extracted from the prefrontal/aPFC clusters predicting PCL increase and the amygdala

volume of interest (see methods main article) to investigate whether amygdala activity moderated the association between baseline aPFC activity and symptom development. Amygdala activity during the baseline assessment did not moderate the relationship between aPFC and symptom increase (effect of the interaction between aPFC and amygdala on delta PCL: $p = 0.87$), nor the relationship between the other frontal activation clusters and symptom increase (all $p > 0.09$).

Hierarchical regression analysis

Additional hierarchical regression models were run to assess the added value of incorporating behavioral (congruency effects reaction times and error rates) and neural (congruency effect Left anterior PFC; extracted beta-values) in predicting PTSD symptom increase (Δ-PCL). As a starting model, we used the baseline PTSD symptoms (PCL), baseline trauma exposure (baseline PLES) and trauma increase scores (Δ-PLES)

First model: PTSD increase ~ Trauma load increase + Trauma load before baseline + PTSD symptoms before baseline. This model predicted PTSD significantly ($F(3,181) = 8.95$, $R^2 = .13$, $p < .001$)

Predictor	Beta	p-value
PTSD symptoms before baseline (PCL baseline)	-0.282	< .001
Trauma load before baseline (PLES baseline)	0.132	.073
Trauma load increase (delta PLES)	0.183	.014

Second model: additional predictors error rate (congruency effect) + reaction times (congruency effect). This model was not significantly better than the first model ($F(2,179) = 0.19$, R^2-change = .002, $p = .83$).

Predictor	Beta	p-value
PTSD symptoms before baseline (PCL baseline)	-0.282	< .001
Trauma load before baseline (PLES baseline)	0.131	.081
Trauma load increase (delta PLES)	0.190	.012
Error rate congruency effect	-0.025	.723
Reaction time congruency effect	-0.032	.656

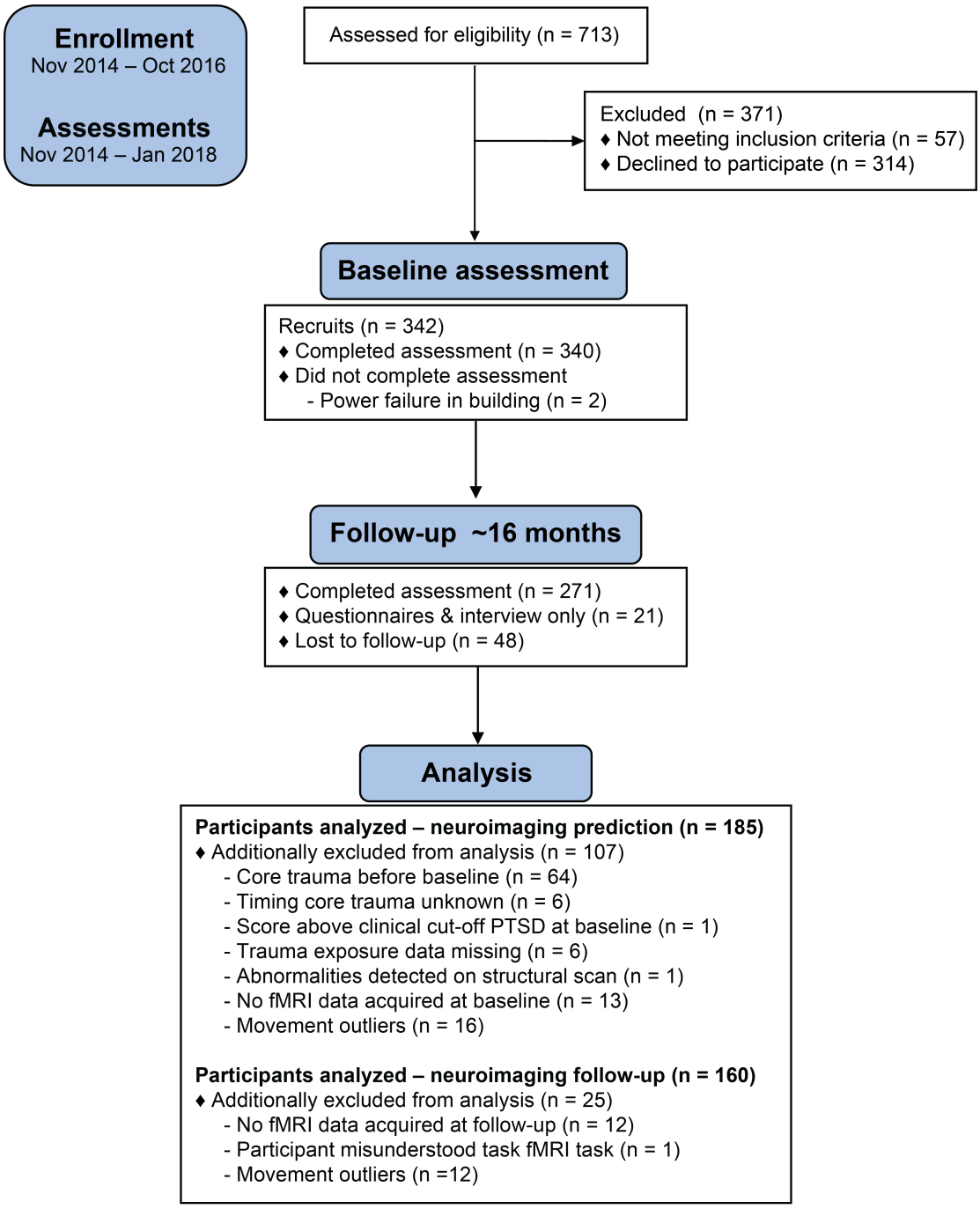
Third model: additional predictor aPFC. This model was significantly better than the previous models.

($F(1,178) = 11.627$, R^2-change = .053, $p = .001$)

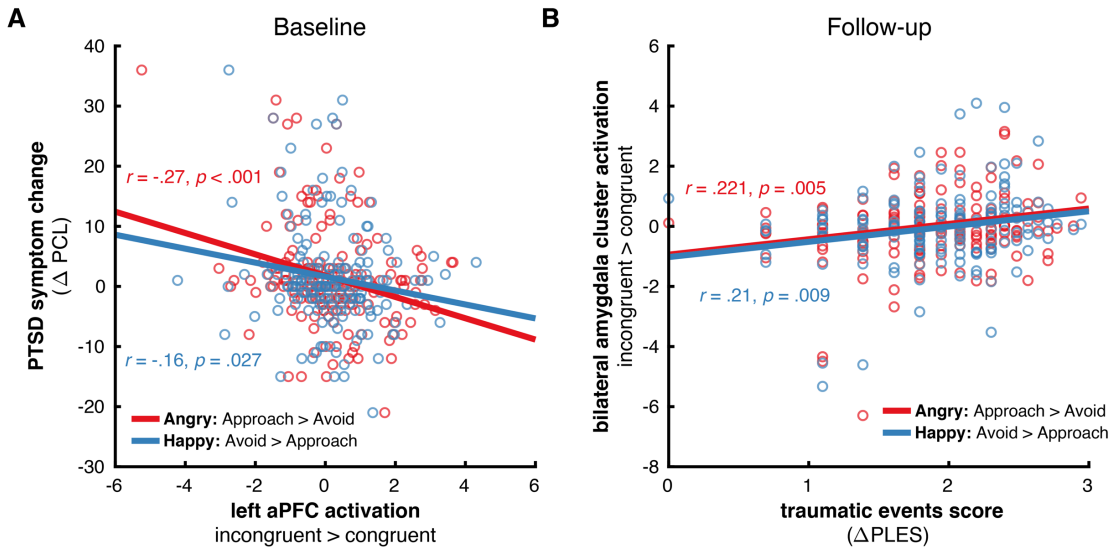
Predictor	Beta	p-value
PTSD symptoms before baseline (PCL baseline)	-0.273	< .001
Trauma load before baseline (PLES baseline)	0.112	.125
Trauma load increase (delta PLES)	0.21	.004
Error rate congruency effect	-0.009	.898
Reaction time concgruency effect	-0.018	.793
Left aPFC cluster	-0.234	.001

The outcome of this hierarchical regression analysis shows that although trauma exposure and preceding PTSD symptoms predict PTSD symptom development, the model including aPFC activity outperforms the other models.

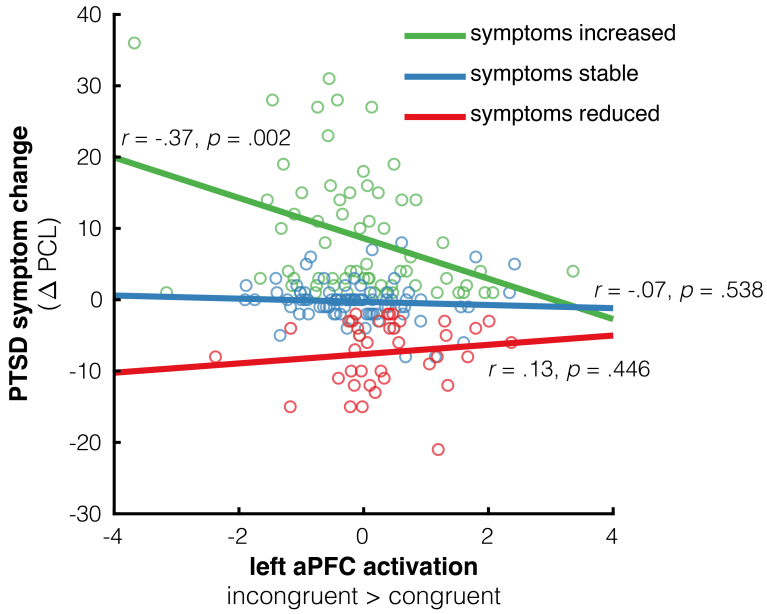
Supplementary Figures



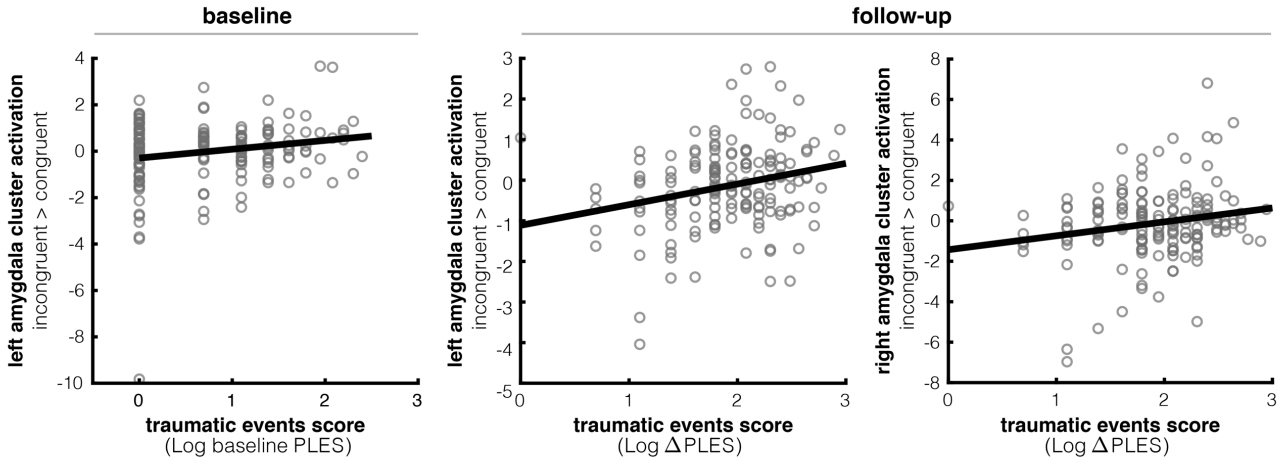
Supplementary figure 1. Consort flow diagram



Supplementary figure 2. Association between the congruency effect (separately for happy and angry faces) on the neural level and trauma exposure and symptoms. **A.** Left anterior prefrontal cortex activation at baseline negatively predicted symptom increase at follow-up. This effect was similar for the congruency effect on happy and on angry faces. **B.** The increase in traumatic events predicted bilateral amygdala activation at follow-up. This effect was similar for the congruency effect on happy and angry faces.



Supplementary figure 3. Relationship between anterior PFC activation at baseline and PTSD symptom change for different symptom clusters generated with an automated clustering approach on PTSD symptom change (increase (*N* = 65), stable (*N* = 82), decrease (*N* = 38)). PTSD symptom change was significantly associated with left aPFC activation in the symptom increase group, but in the other groups (stable and reduced symptoms).



Supplementary figure 4. Relationship between traumatic events (PLES) and amygdala activation at baseline and follow-up. Left amygdala activation at baseline was associated with pre-baseline amount of trauma exposure, whereas bilateral amygdala activation at follow-up was associated with amount of trauma exposure between baseline and follow-up (delta-PLES). PLES = Police Life Events Scale [1].

Supplementary Tables

anatomical region	side	cluster size	x	y	z	*p*	*t*
incongruent > congruent							
Anterior prefrontal cortex / Lateral frontal pole[1]	L	190	-32	54	6	.001	5.75
Anterior prefrontal cortex / Lateral frontal pole[1]	R	106	30	52	8	.006	4.09
Angular gyrus	L	407	-34	-54	40	< .001	6.07
Anterior prefrontal cortex / Lateral frontal pole	R	819	34	48	12	< .001	5.88
Anterior prefrontal cortex / Lateral frontal pole	L	376	-32	54	6	< .001	5.75
Inferior frontal gyrus	R	320	56	34	-14	< .001	5.42
Precuneus	R	453	10	-62	38	< .001	5.05
Supramarginal gyrus	R	412	72	-38	16	< .001	4.87
congruent > incongruent							
Postcentral gyrus	R	911	44	-14	22	< .001	6.13
Caudate nucleus	R	251	10	2	-12	< .001	6.07
Fusiform gyrus	L	475	-26	-34	-16	< .001	5.97
Frontal medial cortex	L	547	-12	36	-14	< .001	5.6
Superior frontal cortex	L	256	-20	34	48	< .001	5.57
Postcentral gyrus	L	270	-44	-16	30	< .001	5.5
Precuneus	R	398	16	-48	2	< .001	5.31
Superior temporal lobe	L	228	-40	-22	-4	< .001	4.98
Precentral gyrus	R	248	34	-18	72	< .001	4.42
Δ*-PCL x congruency [congruent > incongruent]*							
Anterior prefrontal cortex Lateral frontal pole[1]	L	55	-40	58	-6	.003	4.51
Medial frontal pole/paracingulate gyrus	R	813	4	68	4	< .001	7.36
Lateral frontal pole	R	540	46	50	18	< .001	6.47
Frontal pole (dorsal)	R	476	24	46	48	< .001	6.15
Middle temporal gyrus/Lateral occipital lobe	L	486	-54	-80	-8	< .001	5.97
Posterior cingulate cortex	R	295	18	-46	32	< .001	5.48
Middle temporal gyrus/Lateral occipital lobe/Fusiform gyrus	R	675	46	-52	-4	< .001	5.07
Fusiform gyrus/Cerebellum	L	224	-48	-44	-26	< .001	4.96
Calcarine cortex	L	297	-14	-72	16	< .001	4.82
Anterior prefrontal cortex / Lateral frontal pole	L	234	-40	60	4	< .001	4.67

Supplementary table 1. Whole brain effects for the GLM of the baseline AAT task (N = 185). *p*-Values are FWE-corrected at the cluster level for whole-brain effects (initial cluster forming threshold $p < .001$, only results with cluster-level $p < .001$ are reported in this table) and at the voxel level for the volumes of interest (bilateral anterior PFC and amygdala). L = left hemisphere; R = right hemisphere. Coordinates are given in MNI stereotaxic space.[1] Small-volume corrected

anatomical region	side	cluster size	x	y	z	*p*	*t*
incongruent > congruent collapsed over time [baseline + follow-up]							
Lateral frontal pole / anterior prefrontal cortex[1]	L	102	-32	58	6	0.002	4.56
Angular gyrus	L	231	-34	-52	36	< 0.001	4.87
Precuneus	L/R	221	2	-74	50	< 0.001	4.44
congruent > incongruent collapsed over time [baseline + follow-up]							
Amygdala[1]	L	97	-24	-8	-12	0.001	4.64
Postcentral gyrus	L	2411	-38	-18	20	< 0.001	5.56
Fusiform gyrus/Inferior temporal gyrus	R	317	46	-46	-18	< 0.001	5.35
Postcentral gyrus	R	591	38	-14	20	< 0.001	5.11
Mid temporal gyrus	R	260	56	-66	22	< 0.001	4.89
Frontal medial cortex	L/R	396	-10	44	-14	< 0.001	4.65
time [follow-up vs. baseline] x congruency [incongruent > congruent]							
Precuneus	L/R	713	-2	-46	14	< 0.001	5.11
time [baseline vs. follow-up] x congruency [incongruent > congruent]							
Mid/Inferior Temporal lobe	L	525	-46	6	-30	< 0.001	5.02
Amygdala	R	1290	34	0	-22	< 0.001	4.78
delta-PCL x time [follow-up vs. baseline] x congruency [incongruent > congruent]							
Lateral frontal pole / anterior prefrontal cortex[1]	L	59	-40	58	4	0.009	4.16
Posterior cingulate cortex	R	313	24	-44	34	< 0.001	5.98
Medial frontal pole	R	314	8	74	0	< 0.001	5.11
Dorsal frontal pole	R	252	20	50	46	< 0.001	5.01
∆-PLES x time [follow-up vs. baseline] x congruency [incongruent > congruent]							
Amygdala[1]	L	83	-28	-2	-16	< 0.001	5.12
Amygdala[1]	R	37	22	2	-20	0.017	3.72
Pre/postcentral, inferior parietal	L	2127	-34	-12	58	< 0.001	5.62
∆-PLES x time [baseline vs. follow-up] x congruency [incongruent > congruent]							
Medial frontal pole/paracingulate gyrus	L	452	-4	46	0	< 0.001	4.98
Anterior cingulate cortex	L/R	231	0	32	20	< 0.001	4.53

Supplementary table 2. Whole brain effects for GLM of the baseline and follow-up AAT task data (N = 160). *p*-Values are FWE-corrected at the cluster level for whole-brain effects (initial cluster forming threshold p < .001) and at the voxel level for the volumes of interest (bilateral anterior PFC and amygdala). L = left hemisphere; R = right hemisphere. Coordinates are given in MNI stereotaxic space. [1] Small-volume corrected

References

1. Carlier, I. V. E. & Gersons, B. P. R. Development of a scale for traumatic incidents in police work. *Psychiatr. Fenn.* **23**, 59–70 (1992).