Supporting Information

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SI Text

Participants. The study group was composed of 50 healthy individuals (25 female; age 18–19 years; 12 years of education) who were recently drafted to mandatory military service and accepted to serve as combat paramedics in the Israeli Defense Force. Of the 50 individuals who completed the paramedic course and underwent an fMRI scan, 6 choose not to undergo a second scan, and the data of 7 others were excluded from the final analysis due to distorting head movements during scanning ($n = 5$) or signal artifacts ($n = 2$), leaving a final study group of 37 paramedics. The control group included 12 healthy subjects (6 female; age 18–19 years; 12 years of education), all of whom were civilians with no military and/or medical occupational experience. The data of 2 control subjects were excluded from the final analysis due to distorting head movements during scanning. Participants in both groups had no reported history of psychiatric or neurological disorders, no current use of psychoactive drugs, no family history of major psychiatric disorders, and no childhood abuse and/or potentially traumatic events before entering the study. In addition, all participants had normal or corrected-to-normal vision and provided written informed consent approved by the Tel Aviv Sourasky Medical Center Ethics Committee.

Stress Symptom Evaluation. We used the Posttraumatic Stress Diagnostic Scale questionnaire (PDS) (1) to evaluate the number of behavioral stress symptoms at each time point. This questionnaire yields both a PTSD diagnosis according to DSM-IV criteria (2) and a measure of severity for PTSD-like symptoms with high internal consistency, test-retest reliability, and high diagnostic agreement with other scales (1).

MRI Data Acquisition. Brain scanning was done by a 3T GE scanner with a standard head coil. fMRI was performed with gradient echo-planar imaging (EPI) sequence of functional T2*-weighted images (TR/TE/flip angle: 3,000/35/90; FOV: 20 × 20 cm^2; matrix size: 64 × 64) divided to 44 axial slices (thickness: 3 mm; gap: 0 mm) covering the whole cerebrum. Anatomical 3D sequence spoiled gradient (SPGR) echo sequences were obtained with high-resolution 1-mm slice thickness (FOV: 25 × 18; matrix: 256 × 256; TR/TE: 7.3/3.3 ms).

fMRI Data Analysis. Preprocessing of functional scans included correction for head movement, realignment, normalizing the images to Montreal Neurological Institute (MNI) space, and spatially smoothing the data (FWHM: 6 mm) (3). In addition, a set of harmonics was used to account for low-frequency noise in the data (1/128 Hz), and the first 6 images of each functional scan were rejected to allow for T2* equilibration effects.

1. Foa E, et al (1997) The validation of a self-report measure of posttraumatic stress disorder: The posttraumatic diagnostic scale. *Psychol Assess* 9:445–451.
2. American Psychiatric Association (1995) *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Press, Washington, DC), 4th Ed.
3. Frackowiak RSJ, et al (2003) *Human Brain Function* (Academic, New York), 2nd Ed.

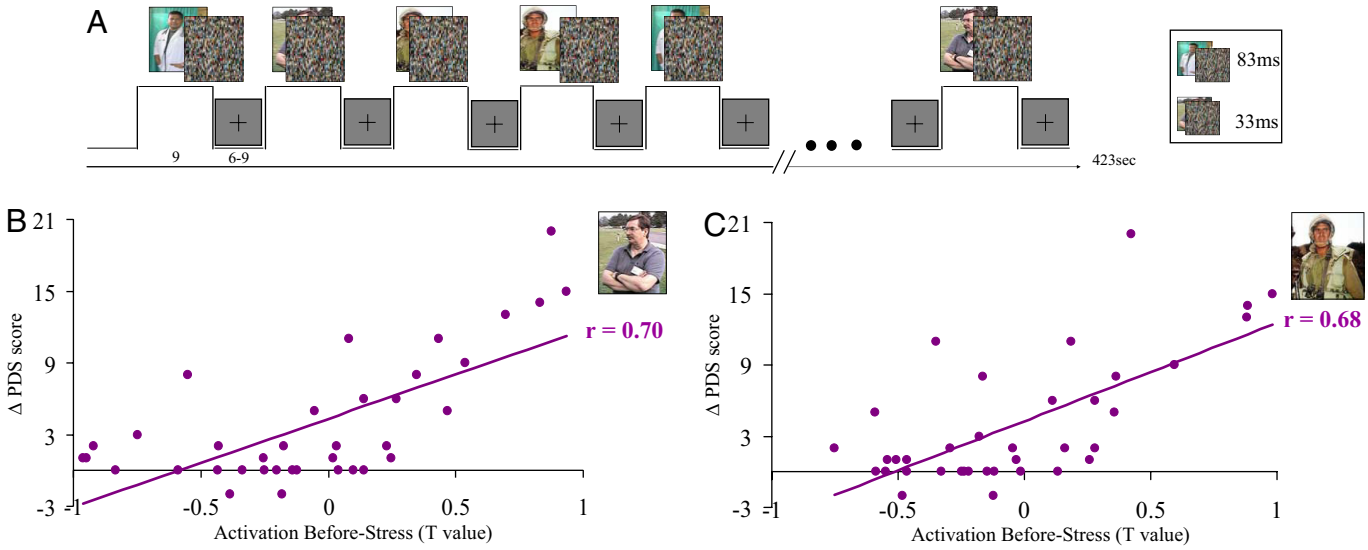

Fig. S1. (*A*) fMRI visual paradigm. Visual stimuli were presented in a parametric block design fashion. Participants viewed colored photographed pictures of 3 contents (military, medical, and civilian), half of which were people and half objects. Each picture was presented for 33 or 83 ms immediately followed by a scrambled image for 477 or 427 ms, respectively (i.e., backward masking). All images were shown only once during a scan. The interstimulus interval was 500 ms, during which a blank gray background was presented. The paradigm was composed of 28 epochs (each 9 sec long) and consisted of a single content interleaved with 6- or 9-sec margins of a blank gray screen. A total of 216 pictures were presented at a rate of 1 Hz. Two versions of the paradigm were counterbalanced between time points and participants to control for the effects of order and repetition. One mixed-content epoch and a blank epoch of 12 sec were shown at the beginning of the experiment for practice and were not included in the analysis. To control for equal attention throughout the paradigm, the participants were asked to indicate whether they recognized a person or an object in the picture by pressing a key after each picture. In this way, the task was unrelated to content per se. (*B*) Scatter plots show individuals' amygdala activation Before Stress in response to civilian content presented for 33 ms as correlated with the individual's change in stress symptoms over time (Δ PDS). (*C*) Response to military content. Note that activation Before Stress is correlated with the change in stress symptoms over time regardless of content, thus predicting the magnitude of increase in stress symptoms [$r = 0.70$; $F(35) = 33.28$; $P <$ 5e-006; $r = 0.68$; $F(35) = 29.74$; $P <$ 5e-006, respectively].

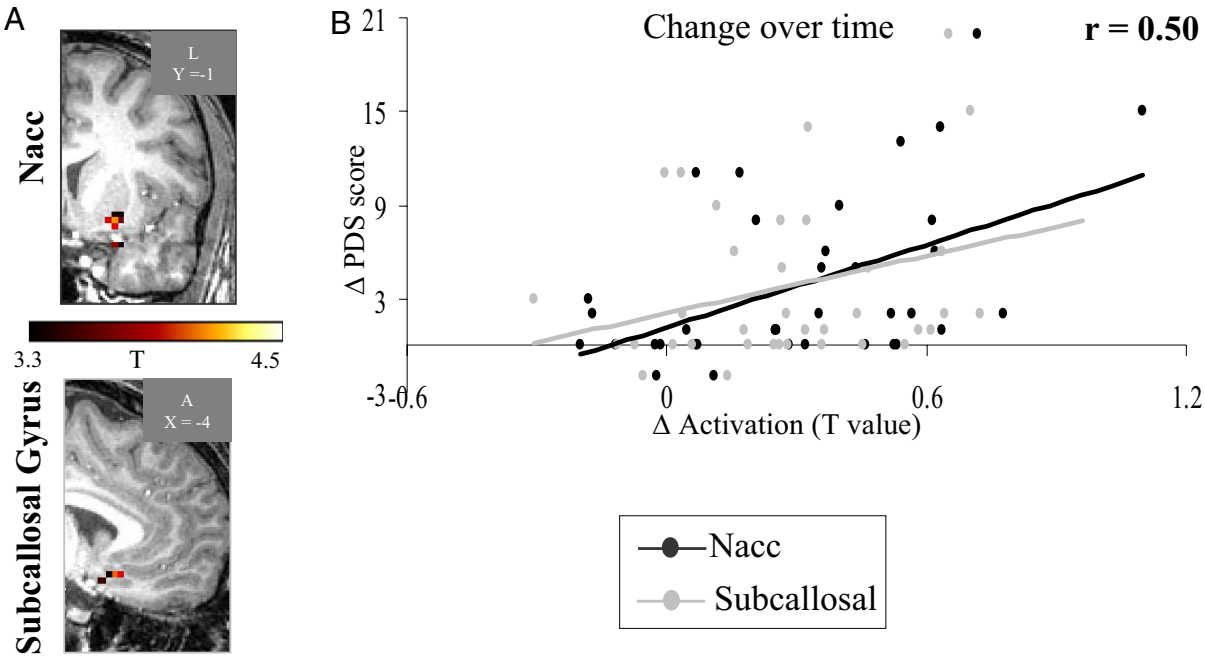

Fig. S2. Regional activation in relation to behavioral stress symptoms change over time. (*A*) Slice views obtained from whole-brain parametric maps for the contrast (After Stress > Before Stress) for the condition of medical content presented for 33 ms. Increased activation After Stress is shown in the left nucleus accumbens (NAcc: coronal view, *Upper*) and subcallosal gyrus (sagittal view, *Lower*) ($P < 0.0005$, uncorrected random effect). (*B*) Scatter plots show individual activation level change over time in each ROI in response to medical content presented for 33 ms as correlated with the individual change in stress symptoms over time (Δ PDS). Note that activation change is correlated with the change in stress symptoms over time in the NAcc but not in the subcallosal gyrus [$r = 0.50$; $F(35) = 11.49$; $P < 0.005$; $n = 37$].

Table S1. Peak of activations obtained from whole-brain contrast in the paramedics group

Region	Cluster (no. voxels)	Peak voxel (MNI: X;Y;Z)	Z value	$P <$ uncorrected
After stress > Before stress				
L. amygdala	18	−28; 0; −21	4.25	5e-005
L. hippocampus	10	−25; −14; −21	3.78	0.0005
vmPFC (BA11)	135	0; 50; −12	4.32	5e-005
dmPFC (BA9/10)	94	−3; 60; 24	4.08	0.0005
L. nucleus accumbens	13	−13; 10; −15	4.08	0.0005
Subcallosal gyrus (BA 25)	86	−4; 9; −12	4.69	5e-005
Precuneus (BA 5/7)	12	−6; −38; 54	3.92	0.0005
Calcarine sulcus (BA 17)	16	−3; −97; 15	3.81	0.0005
Inferior cerebellum	14	−3; −59; −51	4.14	0.0001
R. superior temporal gyrus	72	44; −22; 9	4.00	0.0005
Before stress > After stress				
L. inferior occipital gyrus (BA 18)	32	−22; −94; −9	4.52	0.0001
R. inferior occipital gyrus (BA 18)	44	34; −91; −9	4.13	0.0005
R. middle frontal gyrus (BA 6)	11	28; −13; 48	4.26	0.0005

Localization is based on Montreal Neurological Institute criteria. Estimated level of activation is described by Z score and *P* values. $n = 37$; minimal $P = 0.0005$, uncorrected with random effect. L, left; R, right; vmPFC, ventromedial prefrontal cortex; dmPFC, dorsomedial prefrontal cortex; BA, Brodmann area.

Table S2. Peak of activations obtained from whole-brain contrast in the control group

Region	Cluster (no. voxels)	Peak voxel (MNI: X;Y;Z)	Z value	$P <$ uncorrected
Time 2 > Time 1				
R. caudate	20	22; 0; 21	2.98	0.001
R. precentral gyrus (BA 3)	10	9; −31; 75	3.33	0.0005
R. precuneus (BA 7)	19	6; −81; 48	3.24	0.001
Time1 > Time 2				
L. middle frontal gyrus (BA 10)	16	−25; 50; 21	3.61	0.0005
L. inferior frontal gyrus (BA 47)	15	−50; 34; 0	3.14	0.001

Localization is based on Montreal Neurological Institute (MNI). Estimated level of activation is described by Z score and *P* values. $n = 10$; minimal $P = 0.01$ uncorrected with random effect. L, left; R, right; BA, Brodmann area.

Table S3. Peak of activations obtained from whole-brain contrast of the response to medical content presented for 33 ms in the paramedics group

Region	Cluster (no. voxels)	Peak voxel (MNI: X;Y;Z)	Z value	$P <$ uncorrected
After Stress > Before Stress				
L. amygdala	34	−28; 0; −21	4.25	5e-005
L. nucleus accumbens	10	−19; 10; −11	4.09	0.0005
Subcallosal gyrus (BA 25)	28	−4; 14; −15	4.69	5e-005
Before Stress > After Stress				
L. inferior occipital gyrus (BA 18)	17	−22; −94; −9	4.52	0.0001

Localization is based on Montreal Neurological Institute (MNI) criteria. Estimated level of activation is described by Z score and *P* values. $n = 37$; minimal $P = 0.0005$, uncorrected with random effect. L, left; vmPFC, ventromedial prefrontal cortex; BA, Brodmann area.