Supplement 1

Supplemental Methods and Materials

Description of Self-Report Psychological Measures

Subjects completed the following written self-report measures in advance of the scanning session: Childhood Trauma Questionnaire (CTQ; assessing childhood maltreatment) (1); Revised Conflict Tactics Scale (assessing the type and severity of intimate-partner violence; CTS-2) (2); PTSD Checklist-Civilian (PCL-C; assessing severity of PTSD symptoms) (3); Impact of Events Scale-Revised (IES-R; assessing responses to stressful life events) (4); and, Beck Depression Inventory (BDI; assessing severity of depression) (5).

Table S1. Neuroimaging Studies of Emotional-Face Processing in Posttraumatic Stress Disorder (PTSD)

Study	Population	Paradigm	Stimuli	Contrast	Results
Rauch *et al.*, 2000 (6)	Combat trauma & Resilients	Passive viewing w/ backwards masking	Fearful, happy, and neutral faces	Fearful vs. happy	↑ activation in amygdala, symptom severity + correlated w/ amygdala activation
Armony *et al.*, 2005 (7)	MVA, No controls	Passive viewing w/ backwards masking	Fearful, happy, and neutral faces	Masked vs. Unmasked	Amygdala + correlated with CAPS scores for masked faces, - for unmasked
Shin *et al.*, 2005 (8)	Mixed (Combat, firefighters) & Resilients	Passive viewing	Fearful, happy, and neutral faces	Fearful vs. happy	↑ Amygdala, ↓ rACC, vMFC, dmPFC; Symptom severity – correlated w/ rACC activity
Williams *et al.*, 2006 (9)	Mixed (MVA, Assault) & Controls	Passive viewing	Fearful and neutral faces	Fearful vs. neutral	↓ activation in mPFC/ACC and IPL, ↑ in dmPFC, amygdala, SPL, superior temporal, premotor cortex, and visual cortex
Felmingham *et al.*, 2007 (10)	Mixed (MVA, Assault), No controls	Passive viewing	Fearful and neutral faces	Fearful vs. neutral	↑ rACC activity post tx; change in CAPS + correlated w/ rACC activation and – with amygdala activation
Kemp *et al.*, 2007 (11)	Mixed (MVA and Assault); Comorbid depression vs. non-depressed	Passive viewing	Fearful and neutral faces	Fearful vs. neutral	↓ activation for PTSD-Dep in mPFC and amygdala compared to PTSD alone; ↑ right amygdala activation for PTSD vs. normals; ↓ left amygdala activity for PTSD-Dep vs. normals
Kim *et al.*, 2008 (12)	Survivors of subway fire & Controls	Same-difference judgment w/ emotional conflict	Fearful and neutral faces	Fearful vs. neutral	↓ rACC activation, CAPS – correlated with deactivation in rACC

Bryant *et al*., 2008 (13)	Mixed (MVA, Assault) & Controls	Passive viewing w/ backwards masking	Fearful and neutral faces	Fearful vs. neutral	↑ activation in amygdala and mPFC/ACC
Bryant *et al*., 2008 (14)	Mixed (MVA, Assault) & Controls	Passive viewing w/ backwards masking	Fearful and neutral faces	Fearful vs. neutral	↑ Bilateral amygdala, ↑Right rACC, poor improvement post-tx + associated w/ ventral ACC and amygdala activation
Felmingham *et al*., 2008 (15)	Mixed (MVA, Assault), No controls	Passive viewing (conscious and nonconscious)	Fearful and neutral faces	Fearful vs. neutral	For conscious fear, non-dissociatives had ↑ activity in right SFG, MedFG, and IFG and left MFG, while dissociatives had ↑ activity in left vACC. For unconscious fear, dissociatives had ↑ activity in left pallidum, bilateral amygdalae, bilateral insulae, and left thalamus.
Kemp *et al.*, 2009 (16)	Unspecified PTSD sample & Controls, High-SCR & Low-SCR responders	Passive viewing w/ backwards masking	Fearful and neutral faces	Fearful vs. neutral	PTSD High-SCR had ↑ activation in brainstem, amygdala, and mPFC vs. PTSD Low-SCR; SCR + correlated w/ activity in thalamus, brainstem, amygdala, and mPFC; CAPS + correlated w/ activity in mPFC and bilateral amygdalae

rACC, rostral anterior cingulate; vMFC, ventromedial prefrontal cortex; dmPFC, dorsomedial prefrontal cortex; IPL, inferior parietal lobule; SPL, superior parietal lobule; SFG, superior frontal gyrus; MedFG, medial frontal gyrus; IFG, inferior frontal gyrus; MFG, middle frontal gyrus; vACC, ventral anterior cingulate; MVA, motor vehicle accident; SCR, skin conductance response; CAPS, Clinician-Administered PTSD Scale

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Table S2. Demographic and Self-Report Psychological Measure Statistics by Group

Demographic/Psychological Variables	IPV-PTSD			Non-Traumatized Controls				
	Mean	SD	Range	Mean	SD	Range	t/χ^2	p
Age (yrs)	35.40	8.60	24-49	37	6.49	27-50	-.832	*ns*
Education (yrs)	12.66	2.64	7-16	14.95	1.32	12-16	-2.68	<.05
Marital Status Married/living w/ partner Never married Separated/divorced	*n=0* *n=5* *n=7*			*n=3* *n=8* *n=1*			6.250	<.05
Race African-American Asian-American Caucasian Filipino-American Hispanic Mexican-American Other	*n=3* *n=0* *n=7* *n=0* *n=2* *n=0* *n=0*			*n=1* *n=0* *n=6* *n=1* *n=0* *n=1* *n=3*			4.50	*ns*
Comorbid Diagnosis (lifetime or current) Major Depressive Disorder Generalized Anxiety Disorder Panic Disorder	*n=7* *n=4* *n=3*			--				
Clinician Administered PTSD Scale Total (CAPS)	71	25.34	30-110	--	--	--	N/A	N/A
Conflict Tactics Scale Revised (CTS-2) Total Negotiation Subscale Psychological Aggression Subscale Physical Assault Subscale Sexual Coercion Subscale	272.4 30.36 93.36 78.82 36.64	253.0 26.91 58.04 96.45 53.94	0-873 0-81 0-177 0-290 0-175	44.09 44.22 2.9 0.1 0	42.08 42.44 6.19 0.32 0	0-125 0-125 0-19 0-1 0	2.953 -.889 4.892 2.575 2.027	<.01 *ns* <.001 <.05 *ns*

Injury Subscale	33.27	44.20	0-150	0.2	0.63	0-2	2.360	<.05
Childhood Trauma Questionnaire (CTQ) Total	64.73	4.47	55-72	64.58	4.05	58-69	.081	*ns*
Impact of Events Scale-Revised (IES-R) Total Avoidance Subscale Hyperarousal Subscale Intrusions Subscale	45.55 18 11.82 15.72	20.60 6.85 6.66 8.02	10-69 7-28 0-19 1-25	0 0 0 0	0 0 0 0	0 0 0 0	6.60 7.837 5.598 6.182	<.001 <.001 <.001 <.001
Beck Depression Inventory-2 (BDI-2) Total	16.75	11.01	4-41	1.83	2.40	0-6	4.584	<.001
PTSD Checklist Civilian (PCL-C) Total Re-experiencing Subscale Avoidance/Numbing Subscale Hyperarousal Subscale	64.83 18.17 26.50 20.17	11.36 4.30 6.77 3.38	45-77 9-24 12-35 14-25	-- 	-- 	-- 	N/A	N/A

ns, not significant; N/A, not applicable

Table S3. Behavioral Data From Emotional-Face Matching Task

Trial Type	Reaction Time (ms)					% of Trials Incorrect				
	Mean	SD	Range	*t*	*p*	Mean	SD	Range	*t*	*p*
Angry Faces IPV-PTSD NTC	1695.01 1532.90	510.62 466.50	1068.83-2609.0 1020.18-2559.58	.796	*ns*	5.67 3.24	5.72 9.61	0-15.38 0-33.33	.729	*ns*
Fearful Faces IPV-PTSD NTC	1923.24 1780.99	569.33 484.59	1221.71-3151.95 1237.09-2681.31	.647	*ns*	7.35 4.14	8.76 6.74	0-22.22 0-22.22	.989	*ns*
Happy Faces IPV-PTSD NTC	1355.70 1293.13	306.53 267.38	876.85-1967.69 1027.25-1838.60	.523	*ns*	1.01 0	3.35 0	0-11.11 0	1.047	*ns*
Shapes IPV-PTSD NTC	1061.06 999.29	271.10 127.88	735.88-1530.51 733.78-1237.83	.709	*ns*	.479 3.91	1.58 7.52	0-5.26 0-25	-1.48	*ns*

ns, not significant; IPV-PTSD, intimate-partner violence posttraumatic stress disorder; NTC, non-traumatized controls

Table S4. Task-Dependent Activations for Matching to a Fearful vs. Happy Target Face Across All Participants. Cluster coordinates and anatomical areas are for cluster center of mass as defined by Talairach stereotactic space; Negative (-) signs following anatomical area indicate a relative deactivation; Descriptors for ACC and insula clusters do not reflect stereotactic distinctions, but are estimates based upon the relative location of activation on the group map.

Analysis	Side	Anatomical Area	Size (μl)	X	Y	Z	Voxelwise Statistics: Mean (SD)	
							t	*p*
ROI	B	Dorsal ACC	2048	7.5	30.4	20.3	2.647 (0.45)	.020 (.016)
ROI	R	Insula (m)	1472	39.8	5.1	14.1	3.286 (0.63)	.007 (.008)
ROI	R	Insula (a)	1088	33.1	18.1	-0.7	2.529 (0.43)	.025 (.015)
ROI	B	Medial Frontal Gyrus (-)	640	-3.3	49.9	-2.2	-2.560 (0.39)	.023 (.017)
ROI	L	Insula (a)	512	-30.7	21	0.8	2.480 (0.31)	.025 (.014)
ROI	R	Insula (p) (-)	384	37.8	-24.5	13.9	-2.277 (0.14)	.033 (.009)
ROI	L	Insula (a)	320	-41.2	15	10.5	2.510 (0.25)	.021 (.009)
ROI	R	Amygdala	192	25.3	-5	-20	2.347 (0.16)	.028 (.009)
WB	R	Fusiform Gyrus	14784	43.3	-54.8	-17.8	2.625 (0.46)	.021 (.014)
WB	R	Inferior Frontal Gyrus	10816	44	12.4	18.8	2.817 (0.53)	.016 (.013)
WB	R	Thalamus	9600	3.8	-16.0	0.2	2.799 (0.58)	.017 (.015)
WB	L	Declive	9536	-35.3	-64.8	-19.9	2.637 (0.39)	.019 (.013)
WB	R	Insula (a)	4532	27.9	16.4	-2.4	2.551 (0.37)	.022 (.014)
WB	L	Inferior Frontal Gyrus	4032	-39.5	25.4	13.0	2.513 (0.39)	.020 (.013)
WB	L	Supramarginal Gyrus	3776	-29.1	-58.3	32.0	2.626 (0.45)	.027 (.014)
WB	R	Middle Temporal Gyrus	3648	35.2	-60.9	27.4	2.563 (0.43)	.023 (.014)
WB	R	Dorsal ACC	3072	6.7	30.5	24.2	2.661 (0.47)	.020 (.014)
WB	R	Dorsal ACC	2688	3.2	11.1	39.4	2.747 (0.53)	.018 (.014)
WB	L	Precentral Gyrus	2624	-29.3	1.3	36.4	2.612 (0.45)	.022 (.015)
WB	R	Posterior Cingulate (-)	1984	2.7	-36.0	37.4	-2.865 (0.60)	.015 (.014)
WB	L	Middle Frontal Gyrus	1280	-30.1	17.3	23.8	2.647 (0.39)	.019 (.013)
WB	L	Medial Frontal Gyrus (-)	1152	-10.7	66.0	10.7	-2.331 (0.26)	.033 (.013)

WB	R	Precuneus	1088	17.7	-74.8	34.5	2.451 (0.24)	.025 (.012)
WB	R	Middle Frontal Gyrus	1024	29.1	-10.3	39.9	2.802 (0.39)	.014 (.011)
WB	L	Medial Frontal Gyrus (-)	832	-1.9	50.5	-3.6	-2.613 (0.38)	.020 (.016)
WB	L	Superior Frontal Gyrus (-)	832	-6.3	55.9	29.1	-2.474 (0.28)	.025 (.013)
WB	L	Pyramis	768	-8.4	-76.6	-24.1	2.557 (0.37)	.021 (.011)

ROI, region of interest; WB, whole brain; L, left; R, right; B, both; ACC, anterior cingulate; m, middle insula; a, anterior insula; p, posterior insula.

Table S5. Task-Dependent Activations for Matching to an Angry vs. Happy Target Face Across All Participants. Cluster coordinates and anatomical areas are for cluster center of mass as defined by Talairach stereotactic space; Negative (-) signs following anatomical area indicate a relative deactivation; Descriptors for ACC clusters do not reflect stereotactic distinctions, but are estimates based upon the relative location of activation on the group map.

Analysis	Side	Anatomical Area	Size (µl)	X	Y	Z	Voxelwise Statistics: Mean (SD)	
							t	*p*
ROI	R	Dorsal ACC	448	10.8	25.1	23.5	2.973 (0.31)	.008 (.005)
WB	L	Precuneus	2176	-25.8	-67.0	32.7	2.774 (0.53)	.017 (.014)
WB	R	Middle Frontal Gyrus	1536	27.3	-11.1	40.9	2.712 (0.43)	.018 (.014)
WB	R	Inferior Frontal Gyrus	1472	41.6	5.1	23.7	2.466 (0.28)	.024 (.013)
WB	L	Middle Frontal Gyrus	1344	-28.5	-9	40.3	2.671 (0.43)	.019 (.016)
WB	R	Inferior Frontal Gyrus	1088	34.6	33.2	13.4	2.645 (0.47)	.021 (.015)
WB	R	Angular Gyrus	832	30.3	-54.4	33.1	2.643 (0.41)	.019 (.012)
WB	R	Dorsal ACC	832	6.3	12.2	41.5	2.473 (0.34)	.026 (.014)
WB	L	Culmen (-)	768	-5.4	-42	-21.1	-2.561 (0.28)	.020 (.009)
WB	L	Thalamus	768	-18.3	-27.1	1.1	2.902 (0.53)	.014 (.014)
WB	R	Middle Frontal Gyrus (-)	704	31.8	59.5	8.1	-2.461 (0.37)	.027 (.017)

See Table S4 for abbreviations.

Table S6. Task-Dependent Activations for Matching to a Male vs. Female Target Face Across All Participants. Cluster coordinates and anatomical areas are for cluster center of mass as defined by Talairach stereotactic space; Negative (-) signs following anatomical area indicate a relative deactivation; Descriptors for ACC and insula clusters do not reflect stereotactic distinctions, but are estimates based upon the relative location of activation on the group map.

Analysis	Side	Anatomical Area	Size (µl)	X	Y	Z	Voxelwise Statistics: Mean (SD)	
							t	*p*
ROI	R	Insula (p)	704	51.1	-32.1	18.8	2.621 (0.46)	.021 (.014)
ROI	L	Insula (m)	384	-37.4	5.5	14.0	2.477 (0.17)	.022 (.007)
WB	L	Postcentral Gyrus	8768	-29.3	-23.1	41.0	2.754 (0.49)	.017 (.013)
WB	R	Superior Temporal Gyrus	6976	45.6	17.4	-11.9	2.657 (0.46)	.020 (.014)
WB	R	Supramarginal Gyrus	6784	32	-52.9	33.4	2.921 (0.60)	.014 (.012)
WB	R	Fusiform Gyrus	4544	38.2	-67.4	-11.9	2.584 (1.34)	.023 (.014)
WB	L	Precuneus	3904	-26.8	-55.9	31.4	2.783 (0.58)	.018 (.015)
WB	L	Lentiform Nucleus	3840	-18.6	-2.1	-0.6	2.737 (0.43)	.017 (.012)
WB	R	Middle Frontal Gyrus	3712	29.7	-10.8	38.8	2.957 (0.68)	.014 (.013)
WB	R	Substantia Nigra	3200	9.6	-13.8	-10.8	2.666 (0.49)	.020 (.015)
WB	L	Cerebellar Tonsil	2944	-5.4	-55.2	-36.8	2.587 (0.48)	.023 (.014)
WB	R	Middle Temporal Gyrus	2816	52.3	-35.1	-4.2	2.682 (0.54)	.020 (.013)
WB	L	Inferior Frontal Gyrus	2752	-28.2	25	-14.9	2.583 (0.39)	.021 (.014)
WB	L	Insula (a)	2304	-34.6	25	18.3	2.602 (0.47)	.023 (.015)
WB	L	Inferior Frontal Gyrus	2304	-42.4	1.1	25.9	2.549 (0.52)	.026 (.017)
WB	L	Dorsal ACC	1856	-19	11.4	33.7	2.601 (0.44)	.022 (.014)
WB	L	Superior Frontal Gyrus (-)	1600	-15.5	41.8	42.7	-2.457 (0.21)	.024 (.011)
WB	R	Superior Temporal Gyrus	1280	52.6	-30	17.2	2.441 (0.39)	.028 (.014)
WB	R	Middle Frontal Gyrus	1216	31.9	12.6	23.4	2.579 (0.35)	.021 (.013)
WB	L	Inferior Frontal Gyrus	1088	-43.6	20.4	-1.5	2.726 (0.44)	.017 (.015)
WB	L	Superior Occipital Gyrus (-)	896	-35.4	-80.7	26.6	-2.633 (0.46)	.022 (.018)

WB	L	Tuber	768	-37.5	-69.4	-26.2	2.631 (0.35)	.019 (.014)
WB	L	Insula (m)	768	-33.7	5.3	17.4	2.328 (0.21)	.031 (.012)
WB	L	Middle Occipital Gyrus	704	-27.1	-78.7	2.7	2.650 (0.37)	.018 (.011)

See Table S4 for abbreviations.

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Table S7. Task-Dependent Connectivity Across All Participants for Matching to a Fearful vs. Happy Target Face. Cluster coordinates and anatomical areas are for cluster center of mass as defined by Talairach stereotactic space; Negative (-) signs following anatomical area indicate a relative decoupling; Descriptors for ACC and insula clusters do not reflect stereotactic distinctions, but are estimates based upon the relative location of activation on the group map.

Seed ROI	Side	Connection ROI	Size (µl)	X	Y	Z	Voxelwise Statistics: Mean (SD)	
							t	*p*
Dorsal ACC	L	Ventral ACC (-)	896	-5.9	35.4	1.4	-2.861 (.488)	.013 (.011)
	L	Insula (p) (-)	896	-31.5	-24.2	14.2	-2.478 (.303)	.024 (.013)
	R	Ventral ACC (-)	832	6	39.1	-1.6	-2.500 (.309)	.024 (.014)
	L	Insula (a) (-)	448	-34.1	19.5	3.7	-2.519 (.256)	.022 (.013)
	L	Amygdala (-)	320	-18.6	-6.9	-11.6	-2.303 (.291)	.034 (.015)
	L	Insula (m) (-)	320	-41.3	-12.4	-6.4	-2.536 (.176)	.019 (.007)
	L	Insula (m) (-)	320	-42	-5	10.1	-2.308 (.238)	.033 (.014)
	L	Amygdala (-)	320	-30	-3.3	-15	-2.971 (.952)	.017 (.015)
Left Insula	R	Perigenual ACC (-)	768	4.9	34.7	13	-2.461 (.311)	.026 (.013)
	R	Ventral ACC (-)	448	3.9	42.6	-0.7	-2.644 (.494)	.019 (.011)
	L	Amygdala (-)	384	-26	-4.3	-15.3	-2.730 (.605)	.019 (.015)
	R	Insula (a) (-)	320	-31.6	18.4	-0.5	-2.505 (.195)	.021 (.007)
Left Insula	L	Insula (p) (-)	576	-36	-5.9	16	-2.476 (.202)	.022 (.009)
Right Amygdala	R	Amygdala (-)	384	23.9	-5	-20.1	-2.524 (.328)	.023 (.012)
	L	Amygdala (-)	192	-26	-6.4	-17.3	-2.502 (.123)	.020 (.005)

See Table S4 for abbreviations.

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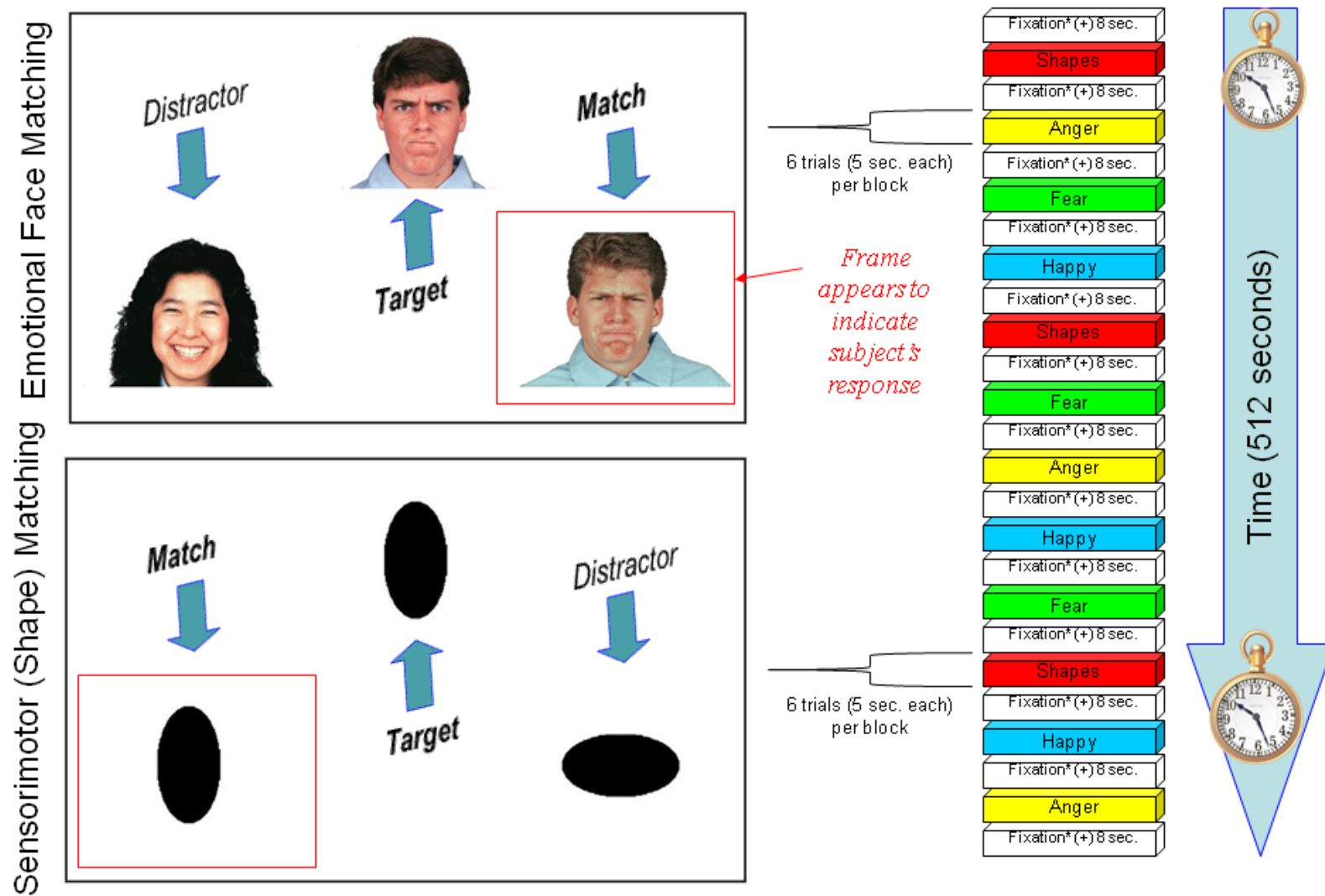
Figure S1. Modified Emotion Face Assessment Task. *Task was modified through addition of happy target face trials to allow for isolation of threat-related emotion. Facial images reprinted with permission from (17).

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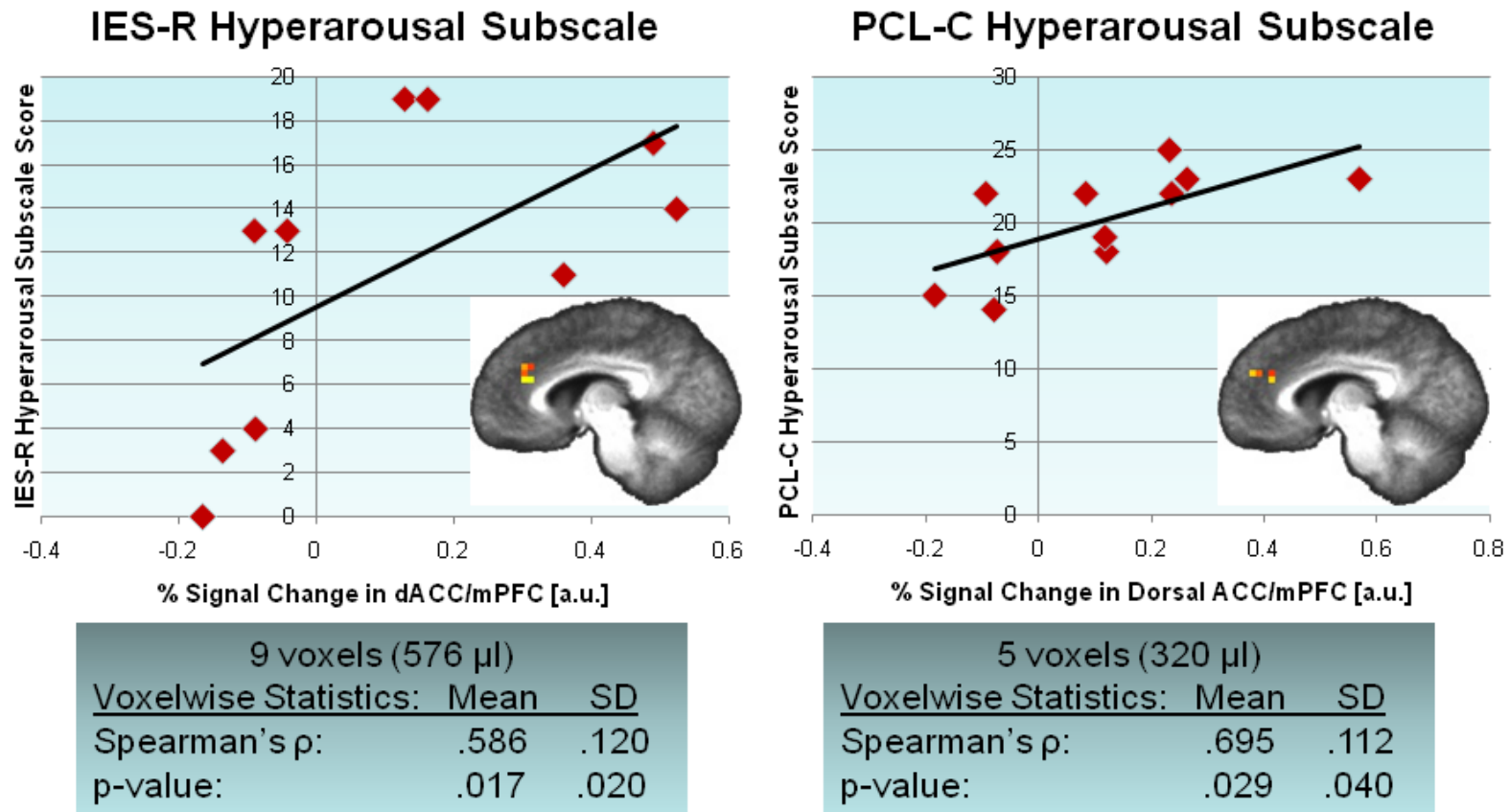
Figure S2. Hyperarousal-Associated Hyperactivation in Dorsal ACC/mPFC in IPV-PTSD Group for Matching to a Male vs. Female Target. Scatterplots depict scale by activity relationships for most representative voxel in each cluster (closest to mean). Voxelwise statistics for each cluster are displayed below.

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