SUPPLEMENTAL MATERIAL

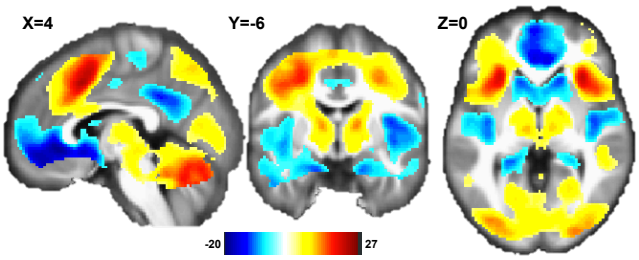
Table S1. The training sample (N = 206) vs. the test (cross-validation) sample (N = 104).

	Training Sample N = 206 106 Women, 100 Men		Test Sample N = 104 47 Women, 57 Men	
Characteristic	*Mean or (%)*	*SD or 95% CI*	*Mean or (%)*	*SD or 95% CI*
Age (years)	40.1	6.4	40.6	6.1
Race (%)				
Caucasian	70.4		71.2	
African American,	23.8		22.1	
Multi-racial, other	5.8		6.7	
Body mass index (kg/m^2)	26.9	5.2	26.7	4.6
Total cholesterol (mg/dL)	186.0	32.5	179.7	32.0
Triglycerides (mg/dL)	93.0	56.9	97.5	60.7
HDL (mg/dL)	51.6	17.7	49.0	13.1
Glucose (mg/dL)	88.7	11.0	88.6	10.7
Number of school years completed	16.8	3.4	16.5	3.1
Seated Resting SBP (mmHg)	120.4	9.8	120.8	9.9
Seated Resting DBP (mmHg)	71.9	8.3	73.5	8.8
Smoking Status (%)				
Current	16.5		17.3	
Former	21.4		16.3	
Never	62.1		66.3	
Depressive symptoms (BDI-II)	3.4	3.6	3.8	3.5
Trait anxiety (STAI-T)	32.5	7.3	33.8	7.6
Trait hostility (CMHS-T)	13.9	7.6	14.5	7.6
Task accuracy (% correct)				
MSIT congruent condition	91.1	7.9	91.8	4.2
MSIT incongruent condition	56.9	7.0	56.1	9.4
Stroop congruent condition	84.5	10.3	84.6	8.1
Stroop incongruent condition	55.7	9.8	55.0	11.1
Task reaction time (milliseconds)				
MSIT congruent condition	544.2	119.6	539.5	111.3
MSIT incongruent condition	902.7	198.1	894.9	211.6

Stroop congruent condition	1293.6	302.3	1313.3	287.8
Stroop incongruent condition	1861.4	485.4	1886.4	442.6
Changes from baseline in valence				
MSIT	-1.0	(-1.3, -0.8)	-1.4	(-1.7, -1.0)
Stroop	-1.5	(-1.8, -1.2)	-1.7	(-2.0, -1.4)
Changes from baseline in arousal				
MSIT	2.6	(2.2, 2.9)	2.6	(2.2, 3.0)
Stroop	3.0	(2.6, 3.3)	3.3	(2.8, 3.7)
Changes from baseline in SBP (mmHg)				
MSIT	3.5	(2.8, 4.2)	3.4	(2.3, 4.5)
Stroop	4.9	(4.0, 5.8)	5.0	(3.7, 6.3)
Changes from baseline in DBP (mmHg)				
MSIT	1.3	(0.7, 1.9)	1.5	(0.7, 2.3)
Stroop	2.1	(1.3, 2.8)	2.4	(1.6, 3.3)
Changes from baseline in HR (BPM)				
MSIT	5.9	(5.2, 6.7)	6.6	(5.6, 7.6)
Stroop	7.9	(7.0, 8.7)	8.6	(7.3, 9.9)

Note. Data are presented as number (or percentage), mean ± SD, or mean and 95% confidence interval (CI). HDL, high-density lipoproteins; LDL, low-density lipoproteins; SBP, systolic blood pressure; DBP, diastolic blood pressure; BDI-II, Beck Depression Inventory-II; STAI-T, State-Trait Anxiety Inventory-Trait version; CMHS-T, Cook-Medley Hostility Inventory-Trait version; MSIT, Multi-Source Interference Task.

Table S2. Stressor-evoked brain activation revealed at a family-wise error rate corrected threshold of P<0.05.



Effect	Region Label	Peak MNI Coordinates x	y	z	Peak t-value	Cluster Size
Positive	L/R Superior Medial Gyrus/Mid-ACC/dorsal ACC	±8	14	46	27.40	18707
	L/R Inferior Frontal Gyrus (pars Opercularis)	±40	4	28	24.08	
	L/R Anterior Insula	±32	22	4	22.90	
	L/R Precentral Gyrus	±30	0	52	22.02	
	L/R Middle Frontal Gyrus	±32	48	14	16.41	
	L/R Inferior Parietal Lobule	±30	-60	44	23.12	22787
	L/R Precuneus	±12	-72	48	21.43	
	L/R Middle Occipital Gyrus	±32	-80	20	20.04	
	L/R Superior Occipital Gyrus	-18	-70	44	19.40	
	L/R Cerebelum	±32	-68	-24	19.89	
	L/R Thalamus	±10	-16	6	16.30	752/845
	R Periaqueductal Gray	2	-28	-8	10.46	845
	R Middle Temporal Gyrus	48	-28	-8	11.62	128
Negative	L/R Rectal Gyrus/subgenual ACC	±12	10	-10	-20.75	5640
	L Rectal Gyrus/vmPFC/perigenual ACC	0	46	-16	-20.27	
	L/R Superior Frontal Gyrus	±16	40	48	-15.37	
	L/R Superior Medial Gyrus	±8	62	6	-12.79	
	L/R Middle Orbital Gyrus	±22	32	-16	-12.51	
	L/R Poster Cingulate Cortex	0	-42	34	-13.50	1056
	L/R Precuneus	±6	-56	20	-11.72	
	L/R Angular Gyrus	±52	-70	32	-20.06	695
	L/R Posterior Insula	±38	-18	16	-16.23	570
	L/R Mid- Occipital Gyrus	±54	-70	30	-16.13	286
	L/R Parahippocampal Gyrus/Hippocampus/Amygdala	±24	-16	-22	-15.81	869
	R Postcentral Gyrus	±48	-22	58	-11.64	130
	L Inferior Temporal Gyrus	±46	0	-36	-11.34	90
	R Superior Frontal Gyrus	20	42	48	-11.06	214
	L Middle Temporal Gyrus	-56	-12	-20	-10.37	84

Note. Regions were labeled using bspmview (https://github.com/spunt/bspmview). ACC, anterior cingulate cortex; vmPFC, ventromedial prefrontal cortex.

Table S3. Regions within the whole-brain multivariate weight map that positively predicted stressor-evoked SBP reactivity after applying a permutation threshold of P<0.05 and a voxel extent threshold of k=50 (1000 permutations). Note that the whole-brain pattern was used in training and testing as described in the text.

Region Label	Extent	t-value	x	y	z
L Middle Temporal Gyrus	255	4.163	-68	-24	-12
L Paracentral Lobule	783	3.877	-18	-24	70
R Postcentral Gyrus	694	3.565	44	-24	54
L Superior Occipital Gyrus	1042	3.406	-18	-72	34
R Inferior Temporal Gyrus	454	3.399	60	-50	-18
R Dorsal Anterior Cingulate	301	3.387	8	36	26
R Insula	421	2.793	34	24	14
R Rolandic Operculum	72	3.343	68	0	20
R Cerebellum/Periaqueductal Gray	96	3.342	18	-28	-20
R Cerebellar Vermis	126	3.312	6	-62	-26
L Dorsal Anterior Cingulate	68	3.236	-2	22	16
L Inferior Occipital Gyrus	113	3.146	-52	-78	0
R Linual Gyrus	51	3.140	8	-58	8
R Cerebelum	58	3.122	32	-86	-22
L Rolandic Operculum	141	3.110	-40	-14	22
R Fusiform Gyrus	111	3.107	38	-10	-30
L Middle Frontal Gyrus	164	3.055	-34	10	56
R Middle Frontal Gyrus	167	3.052	34	14	44
L Middle Frontal Gyrus	146	3.035	-24	30	32
R Mid Orbital Gyrus, perigenual ACC	192	3.028	10	50	-4
L Cerebelum	86	2.955	-18	-88	-32
L Inferior Parietal Lobule	71	2.940	-36	-50	38
R Cerebellum	62	2.937	26	-34	-46
L Superior Orbital Gyrus	202	2.934	-12	62	0
L Superior Frontal Gyrus	202	2.164	-30	66	10
R Inferior Temporal Gyrus	102	2.926	42	-58	-4
R Cerebelum	51	2.924	18	-62	-16
R Posterior Mid-Cingulate	82	2.917	4	-44	48
R Precentral Gyrus	70	2.904	36	-14	44
L Lingual Gyrus	127	2.895	-2	-94	-14
L Inferior Temporal Gyrus	186	2.835	-38	-42	-10
L IFG (p. Triangularis)	50	2.731	-56	30	6
R ParaHippocampal Gyrus	119	2.723	30	-42	-2
R Paracentral Lobule	63	2.714	10	-36	58
L IFG (p. Triangularis)	138	2.685	-54	28	22
L Cerebelum	98	2.646	-46	-50	-30
R Precuneus	97	2.620	10	-68	50
R Posterior Mid-Cingulate	54	2.612	2	-16	40
L Mid Orbital Gyrus, Anterior Cingulate	64	2.577	-2	42	0
R Superior Medial Gyrus	54	2.534	4	52	8
R Parahippocampal Gyrus	52	2.509	36	-34	-8
R Middle Temporal Gyrus	121	2.473	50	-70	26
R Superior Medial Gyrus	65	2.456	6	54	46
R IFG (p. Orbitalis)	50	2.347	36	30	-16
R Supramarginal Gyrus	103	2.336	68	-26	30
L Superior Temporal Gyrus	54	2.319	-64	-36	26

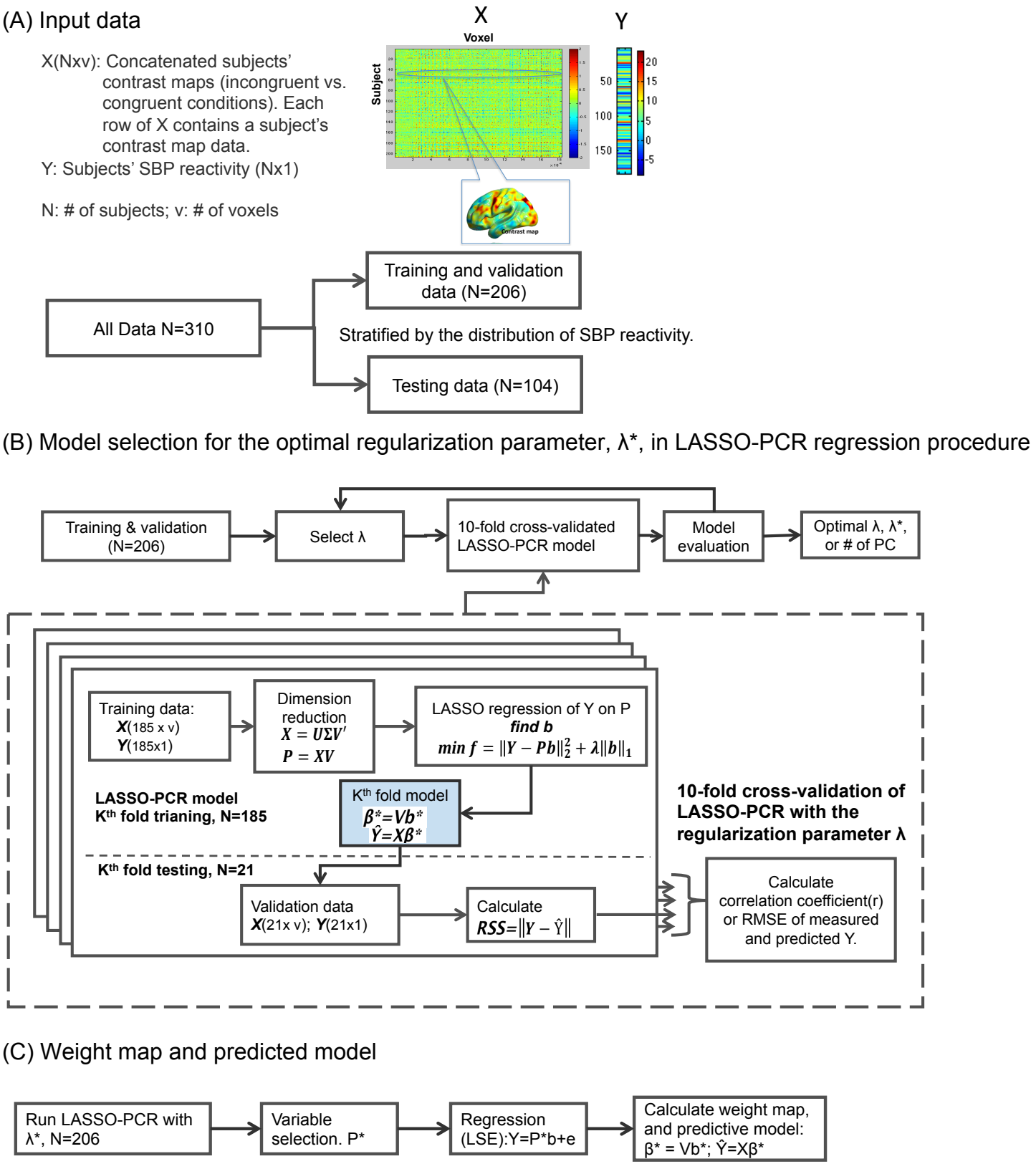
Table S4. Regions within the whole-brain multivariate weight map that negatively predicted stressor-evoked SBP reactivity after applying a permutation threshold of P<0.05 and a voxel extent threshold of k=50. Note that the whole-brain pattern was used in training and testing as described in the text.

Region Label	Extent	t-value	x	y	z
L Paracentral Lobule	256	-4.030	-4	-42	78
L Posterior Cingulate Cortex	295	-3.761	-2	-50	12
R Superior Frontal Gyrus	237	-3.633	30	-10	64
L Middle Temporal Gyrus	267	-3.618	-58	-54	12
R Middle Frontal Gyrus	62	-3.590	40	52	30
R Hippocampus	100	-3.418	32	-20	-12
L Cerebelum	143	-3.380	-18	-64	-36
R Lingual Gyrus	138	-3.325	10	-78	2
Medial Occipital Lobe	127	-3.316	0	-96	-20
R Inferior Temporal Gyrus	62	-3.309	52	-20	-36
L Superior Frontal Gyrus	137	-3.295	-26	54	36
L Fusiform Gyrus	110	-3.268	-26	-20	-46
R Superior Medial Gyrus	60	-3.256	8	70	16
L Inferior Temporal Gyrus	53	-3.247	-52	-30	-30
R Middle Temporal Gyrus	161	-3.216	64	-36	0
L Calcarine Gyrus	284	-3.214	-6	-98	2
L Thalamus	50	-3.200	-14	-28	10
R IFG (p. Opercularis)	169	-3.084	52	12	40
L Anterior Insula, L IFG (p. Orbitalis)	290	-3.076	-46	18	-6
L Putamen	92	-3.064	-18	20	-4
L Medial Temporal Pole	130	-3.063	-36	14	-32
L Fusiform Gyrus	96	-3.015	26	-18	-34
L Superior Medial Gyrus	107	-3.009	2	26	54
R Superior Temporal Gyrus	122	-2.952	56	-36	18
R Brainstem, Pons	194	-2.952	12	-40	-34
L Temporal Pole	59	-2.937	-34	4	-50
L Fusiform Gyrus	160	-2.935	-22	-36	-16
R Cerebelum	73	-2.926	14	-90	-40
L Superior Temporal Gyrus	92	-2.865	-38	-38	16
L Inferior Parietal Lobule	261	-2.859	-52	-54	48
L Angular Gyrus	261	-2.583	-32	-56	42
L Superior Temporal Gyrus	261	-2.537	-64	-54	28
R Middle Temporal Gyrus	53	-2.859	42	-60	12
L Cerebellum	108	-2.849	-50	-72	-42
L Gyrus, Rectus, Ventromedial Prefrontal Cortex	123	-2.845	-6	48	-24
L Superior Orbital Gyrus	123	-2.306	-8	24	-20
L Middle Frontal Gyrus	64	-2.825	-44	18	44
L Supplementary Motor Area	100	-2.811	-2	6	50
R Middle Occipital Gyrus	85	-2.728	38	-90	12
R Cerebelum	226	-2.725	52	-64	-40
R Putamen	164	-2.720	18	8	-4
R Middle Temporal Gyrus	138	-2.713	60	-58	22
L Fusiform Gyrus	73	-2.699	-24	-50	-10
R Cerebelum	50	-2.673	30	-52	-16
R Supramarginal Gyrus	113	-2.666	54	-38	44
L Precentral Gyrus	54	-2.632	-50	2	22
L Paracentral Lobule	81	-2.599	-10	-22	54

L Inferior Temporal Gyrus	53	-2.478	-52	-12	-22
R Lingual Gyrus	74	-2.418	24	-98	-14
L Angular Gyrus	56	-2.369	-42	-76	44

Note: t-values were determined by 1000 random permutations of Y vs. X to compute the standard deviation of the whole brain multivariate pattern under the null hypothesis of no association between the pattern and SBP reactivity. Regions were labeled in bspmview (https://github.com/spunt/bspmview). ACC, Anterior Cingulate Cortex; IFG: inferior frontal gyrus.

Figure S1. Machine learning methods and cross-validation.



(D) Model performance testing

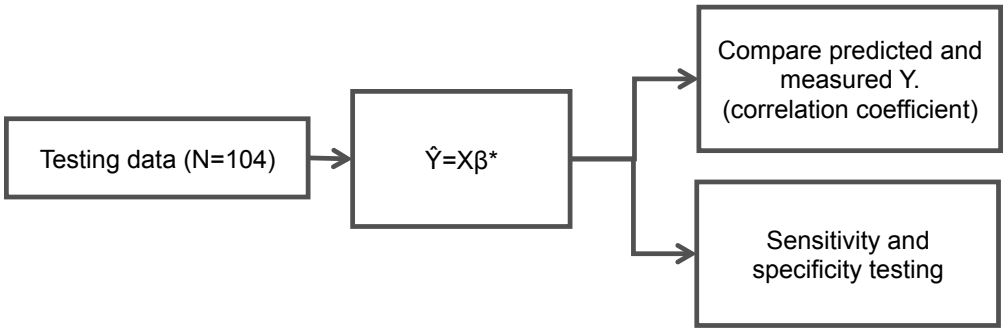


Figure S1. Schematic of machine learning procedure using LASSO-PCR, with 10-fold cross-validation. (A) Input data. (B) In each fold, k, k=1,..10, brain activation maps from the training sample were concatenated (X) and converted to a principal components' matrix, P, for a penalized regression model predicting SBP reactivity (Y) on P. LASSO with a regularization parameter, λ, between 0 and 1 was used to fit the model. The fitted model was used to predict Y in the validation sample and compute the residual sum of square (RSE) for each fold. The root mean square error (RMSE), as well as the correlation of the predicted and measured Y, was summarized from all folds. The best λ that yielded the smallest RMSE was selected. (C) The regression of Y on the principal components was run with the best λ. Ordinary least square estimation was applied to fit the regression of Y on the selected components. The estimated coefficients were projected back to 3D voxel space to derive the final multivariate pattern (weight map, β*) to predict SBP reactivity (y), $y = x \beta^*$. (D) As described in the Methods of the main text, the model was tested for accuracy using a separate and independent sample of subjects not used for training, the test sample.