Supplementary Material for

Neural correlates of and processes underlying generalized and differential return of fear

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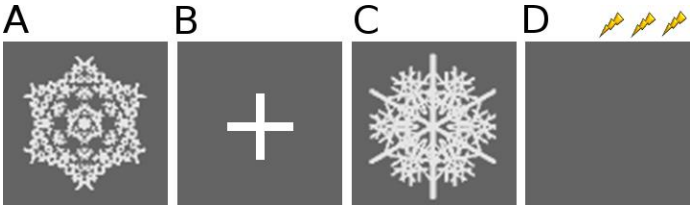
Supplementary Methods S1. – Stressful life events

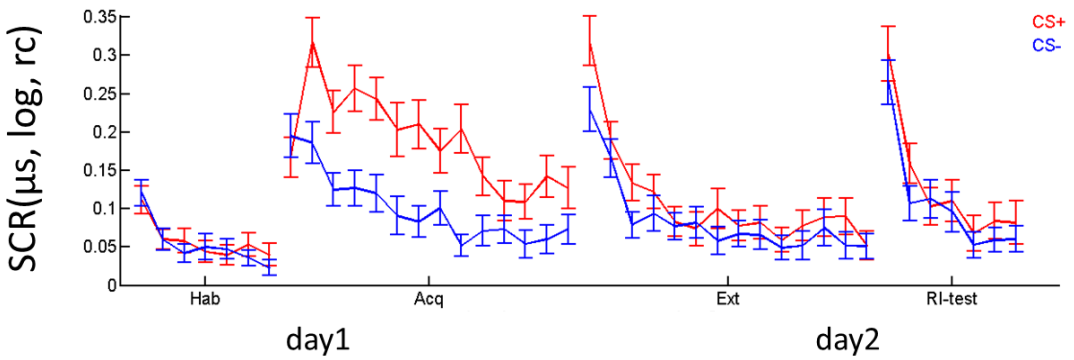
The Experiment was designed to allow further investigations regarding individual differences due to the history of stressful life events (SLE). Thus, participants were pre-selected based on the presence and absence of early (i.e. before the age of 12) and recent (i.e. past 3 years) negative SLEs and therefore yielding four different groups (see **Supplementary Table 1;** early SLE-/recent SLE-, early SLE+/recent SLE+, early SLE-/recent SLE+, early SLE+/recent SLE-). Note, that for early life events implausible items were not taken into account ("traumatic event at your workplace"; "abortion or perinatal complications for you or your partner"; "intensive care taking of an old sick person"; "wedding plans").

Supplementary Table S1. Sample characteristics of the SLE subsamples. SLE before the backslash refers to early childhood and SLE after the backslash refers to the last three years. The + and – indicate the presence (+) or absence (-) of SLE.

	SLE-/SLE-	SLE+/SLE+	SLE-/SLE+	SLE+/SLE-
N	21	22	20	13
age(SD)	26.4(3.7)	24.5(3.9)	24(2.5)	24.5(3.2)
female	12	11	11	7



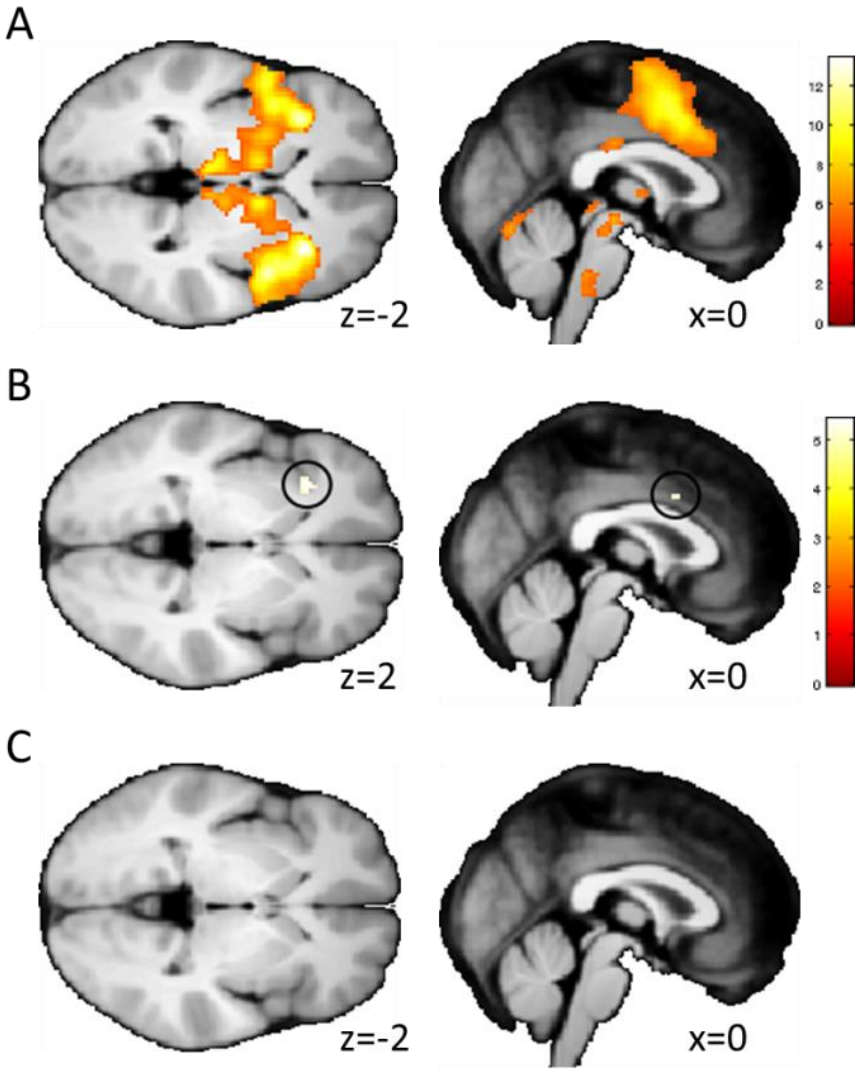
Supplementary Figure S1. Stimulus material used as CSs **(A,C)** as well as the ITI **(B)** and the reinstatement context (i.e. the visual presentation during the reinstatement US administration, **D**). Note that the three bolt signals indicating reinstatement US in this example were not presented to the participants.



Supplementary Figure S2. Logarithmized (log) and range corrected (rc) single-trial SCR responses of all subjects (in µs) for the CS+ (red) and CS- (blue) during all experimental phases [day1: Habituation (Hab), Acquisition (Acq); day2: Extinction (Ext), Reinstatement-test (RI-test)]. Errorbars represent the standard error of the mean.

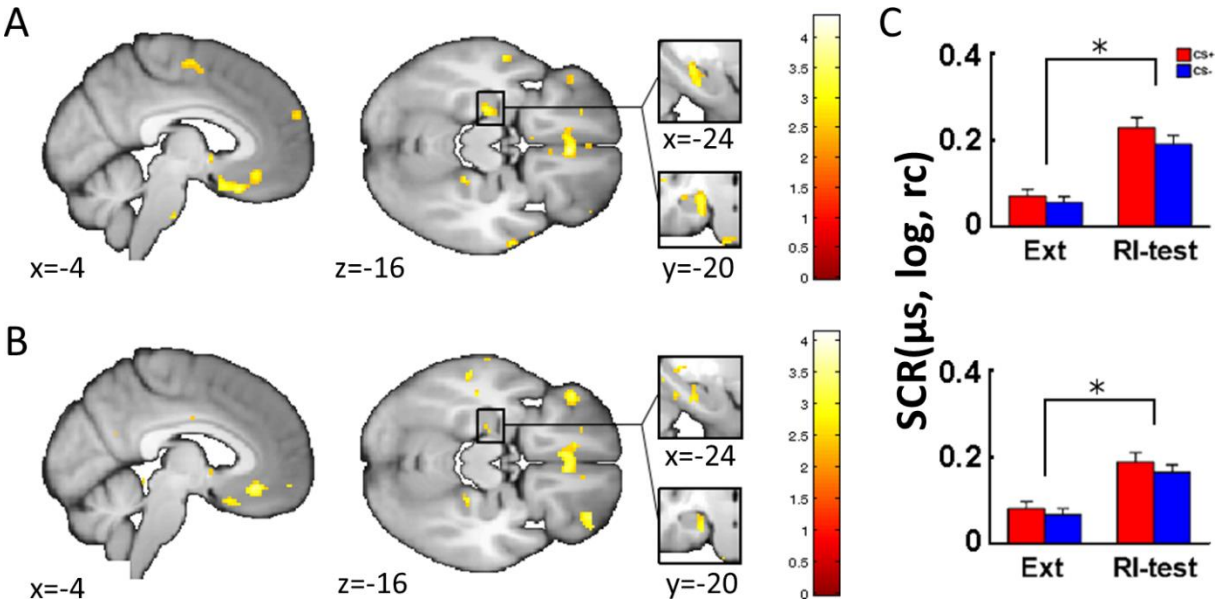
Supplementary Table S2. Results for SCRs and ratings derived from repeated measure ANCOVAs. For SCRs ANCOVAS (CS type: CS+/CS-) were separately calculated for the acquisition and extinction phase as well as for the 1st and 2nd half of the extinction phase. For ratings ANCOVAS were separately calculated for acquisition, extinction and RI-test including CS type (CS+/CS-) and time (pre and post experimental phase; to account for individual response styles). Additionally an ANCOVA for ratings after extinction was calculated including CS type (CS+/CS-). Group was always included as covariate.

		F	df	p	Eta²
SCR					
Acquisition		9.37	66/1	0.003	0.124
Extinction		3.35	68/1	0.072	0.047
	1st half	9.19	71/1	0.003	0.115
	2nd half	0.12	70/1	0.731	0.002
ratings					
Acquisition	time	20.56	64/1	< 0.001	0.243
	stimulus	10.51	64/1	0.002	0.141
	time*stimulus	16.54	64/1	< 0.001	0.205
Extinction	time	<1	66/1	0.601	0.004
	stimulus	11.42	66/1	0.001	0.147
	time*stimulus	2.69	66/1	0.106	0.039
RI-test	time	<1	64/1	0.760	0.001
	stimulus	<1	64/1	0.442	0.009
	time*stimulus	<1	64/1	0.654	0.003
after Ext.	stimulus	<1	66/1	0.416	0.010

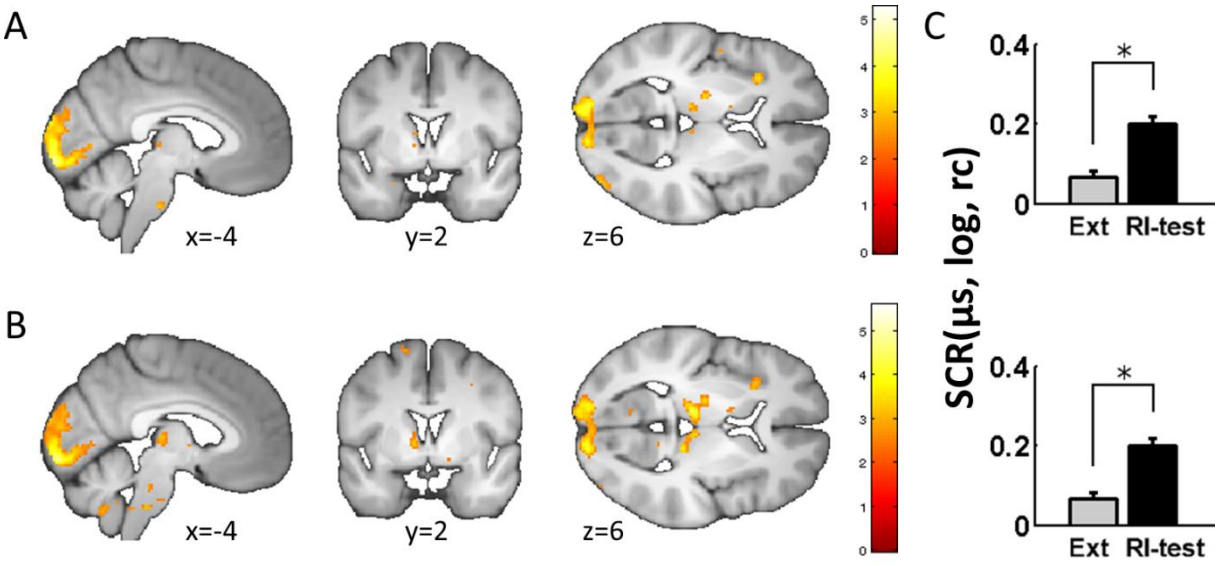


Supplementary Figure S3. Neural activation (CS+>CS-) during acquisition **(A)**, 1st half of extinction **(B)** and the last three trials of extinction **(C)**. The visualization threshold is set to $p_{FWE}<0.05$.

Note:
Acquisition: At the first level, two effects-of-interest regressors were built (i.e. both CS+ and CS-, each consiting of fourteen trials) as well as eight nuisance regressors (USs; ratings; six movement parameters derived from realignment). All regressors of interest were modeled as stick function and time locked to stimulus (CS/US/rating) onset. Regression coefficients (beta values) for the regressor in each voxel were computed via the general linear model. Regression coefficients (beta values) for the regressor in each voxel were created via the general linear model. The resulting contrast estimates were taken into the second level analysis employing one-sample t-tests.
Extinction: At the first level, four effects-of-interest regressors were built (i.e. both CS+ and CS- for the first half of, each consiting of seven trials and CS+ and CS- for the end of extinctio, eaach consiting three trials) as well as nine nuisance regressors (ratings; remaining CS+ and CS- trials; six movement parameters derived from realignment). All regressors of interest were modeled as stick function and time locked to stimulus (CS/US/rating) onset. Regression coefficients (beta values) for the regressor in each voxel were computed via the general linear model. Regression coefficients (beta values) for the regressor in each voxel were created via the general linear model. The resulting contrast estimates were taken into the second level analysis employing one-sample t-tests.



Supplementary Figure S4. Differential reinstatement ($RI_{CS+>CS-}$>$Ext_{CS+>CS-}$) when contrasting the last two extinction and first two RI-test trials **(A)** as well as the last three extinction and first three RI-test trials **(B)** and corresponding SCRs responses **(C)**. The visualization threshold was set to p<0.01. Errorbars represent the standard error of the mean.



Supplementary Figure S5. Generalized reinstatement ($RI_{CS+/CS-}$>$Ext_{CS+/CS-}$) when contrasting the last two extinction and first two RI-test trials **(A)** as well as the last three extinction and first three RI-test trials **(B)** and corresponding SCRs responses **(C)**. The visualization threshold was set to p<0.01. Errorbars represent the standard error of the mean.