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Supplemental Information

**Unexpected Transcriptional Programs Contribute
to Hippocampal Memory Deficits and Neuronal
Stunting after Early-Life Adversity**

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Supplementary Figures

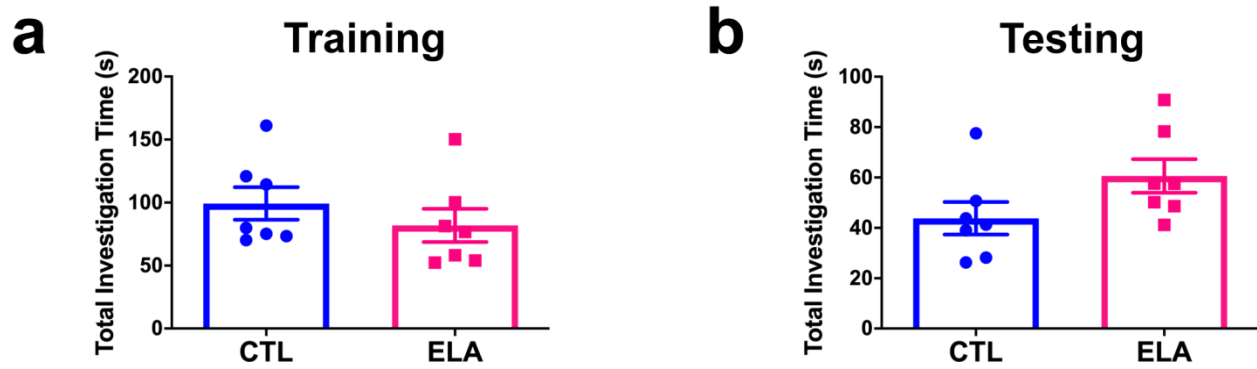


Figure S1. ELA-induced spatial memory deficits in the object location task are not the result of anxiety or lack of motivation, Related to Figure 1a. Total exploration durations in both the training (a) and testing (b) sessions failed to distinguish between the control (CTL) and early-life adversity (ELA) groups. Data are presented as mean \pm SEM.

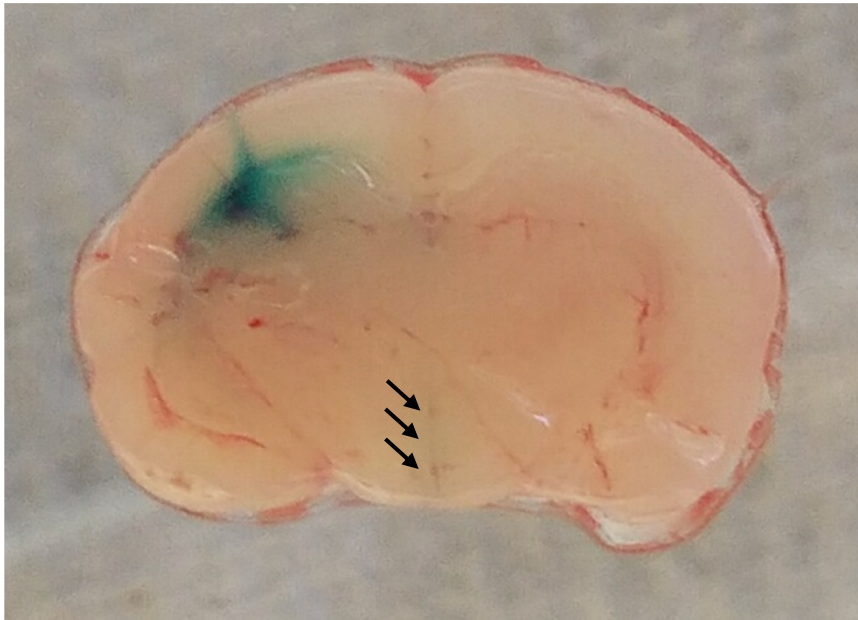


Figure S2. Validation of intracerebroventricular administration of ODNs, Related to STAR Methods. In order to block the binding of NRSF to chromatin, we administered NRSE decoy oligodeoxynucleotides (NRSE-ODNs) or scrambled (SCR)-ODNs into the lateral ventricles (i.c.v.) by using bregma demarcations, which are visible through the skin in a P10 rat pup. Here we show an image of the result of a unilateral methyl green dye i.c.v. injection, which clearly shows the dye spread into the lateral ventricles and around the hippocampus, as well as some dye present in the third ventricle (arrows) due to its spread throughout the cerebrospinal fluid. For this experiment, the P10 rat was sacrificed ~30 min. following i.c.v. injection, and the brain was rapidly removed and sectioned at the level of the injection site.

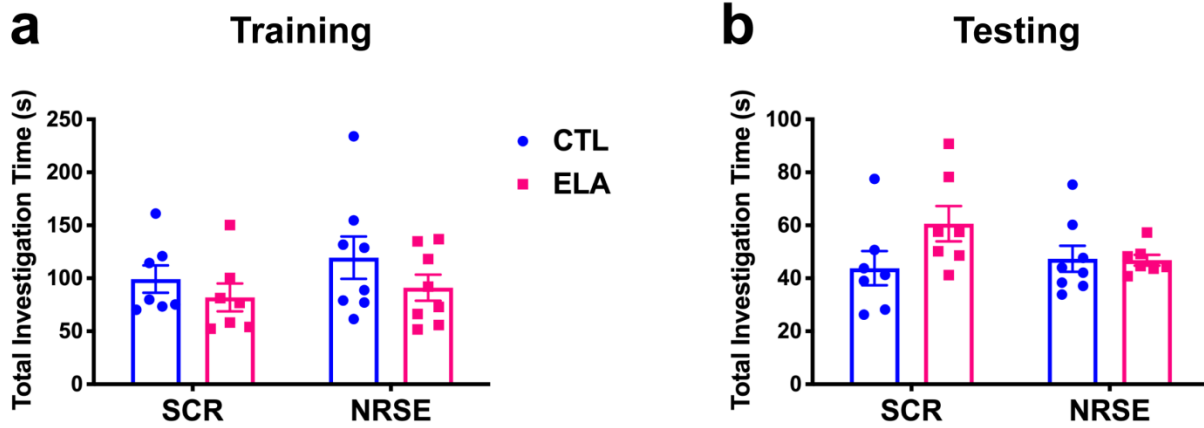


Figure S3. ELA and NRSE block do not alter rats' motivation to explore objects in the object location task, Related to Figure 4c. Total exploration durations in both the training (a) or testing (b) sessions failed to distinguish the CTL and ELA groups, as well as the groups treated with SCR or NRSE decoy ODNs. Data are presented as mean \pm SEM.

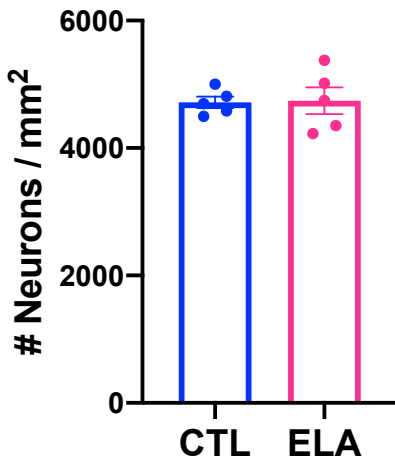


Figure S4. ELA-induced memory deficits are not due to outright pyramidal cell loss, Related to Figure 5. Early-life adversity does not alter the number of pyramidal neurons in the *stratum pyramidale* of dorsal CA1 of adult male rats, as visualized with a Nissl stain. Data are presented as mean \pm SEM neurons per area of CA1.

Supplementary Tables

Table S5. Primer sequences for qRT-PCR, Related to STAR Methods.

| Gene | Forward | Reverse |
|----------------|--|---|
| Gapdh | 5'-ATGCCATCACTGCCACTCAGA | 5'-ACCAGTGGATGCAGGGATGAT |
| B3gat2 | 5'-ATGGCTGGATTTGCTGTGAGTCTG-3' | 5'-TGGTTCCAGTTCGTCAACTGTTGTG-3' |
| Nell1 | 5'-GCCCAAGAGAAGAGATACGCTACC-3' | 5'-CACGCTCGTAAATCCTATTGCAGTC-3' |
| Npas4 | 5'- GTGTCCTAATCTACCTGGGCTTTGAGCG- 3' | 5'- GAATATCTCCATTTTCAGCCAACAGGCGG- 3' |
| Pex5l (Trip8b) | 5'-CATCACAGCTGGTGAATGAGCAAC-3' | 5'-CACTCAGGTCAAGGAGATCCAAGC-3' |
| Rgs12 | 5'-CTATATCAAGTCTGGATGGACAGCGG- 3' | 5'-GCCTAGTGTTCTCTCCTCTCCCATAG-3' |
| Rspo3 | 5'-GTCAGTATTGTACTGTGAGGCCAG- 3' | 5'-GAAGGATGCTGCAGTATATCTCGGAC- 3' |
| Sparel1 | 5'-CAAACCTTTTACCTCCTGGCTGTGTG-3' | 5'-AATGATCAGAGAGAAACGTTGTCTGGG- 3' |
| Tmem108 | 5'-ACCATGGACTACTTCAACAGACATGC- 3' | 5'-TCTCAGAACTTGGTCGTTTCCCAC-3' |

Table S6. Primer sequences for ChIP, Related to STAR Methods.

| NRSF Primers for ChIP | Forward | Reverse |
|---------------------------------|--------------------------------------|-------------------------------|
| Npas4 NRSE 1 | 5'- ACCTGTTGACCCTATGCTTGTGGATC-3' | 5'-AATCCGCGCAATCGCAAGC-3' |
| Npas4 NRSE 2 and 3 | 5'-GATTGCGCGGATTTGGTTCGTTTC-3' | 5'-TCTAAGACCTCTGGAGCGCTGTC-3' |
| H3K9me2 Primers for ChIP | Forward | Reverse |
| Npas 4 promoter-binding site 1 | 5'-ATAATTCCTTCTTCGCCTCCGTGAC | 5'-GATGTTTGTGTTCTGTGCTGCTAA |
| Npas 4 promoter-binding site 2 | 5'-CATCCTGACAGTACACGGGTTAG | 5'-CCCTTCTCATCCTTTGCCTCCTTAG |
| Npas 4 promoter-binding site 3 | 5'-GGCTTCCTCTTCCTTGCTTCC | 5'-AGGAGCTATATAAGGCGGATCGAG |
| Npas 4 promoter-binding site 4 | 5'-CTTCTCCCCATAGGCTTCCAGT | 5'-ACACTCGCAAGGGTGTCTTC |