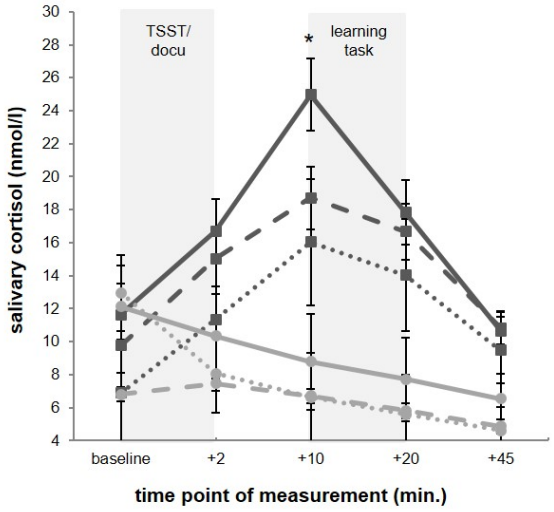
Supplemental Material (Manuscript: Cortisol modulates the engagement of multiple memory systems: exploration of a common *NR3C2* polymorphism, by Katja Langer, Dirk Moser, Tobias Otto, Oliver T. Wolf, Robert Kumsta

Supplementary results

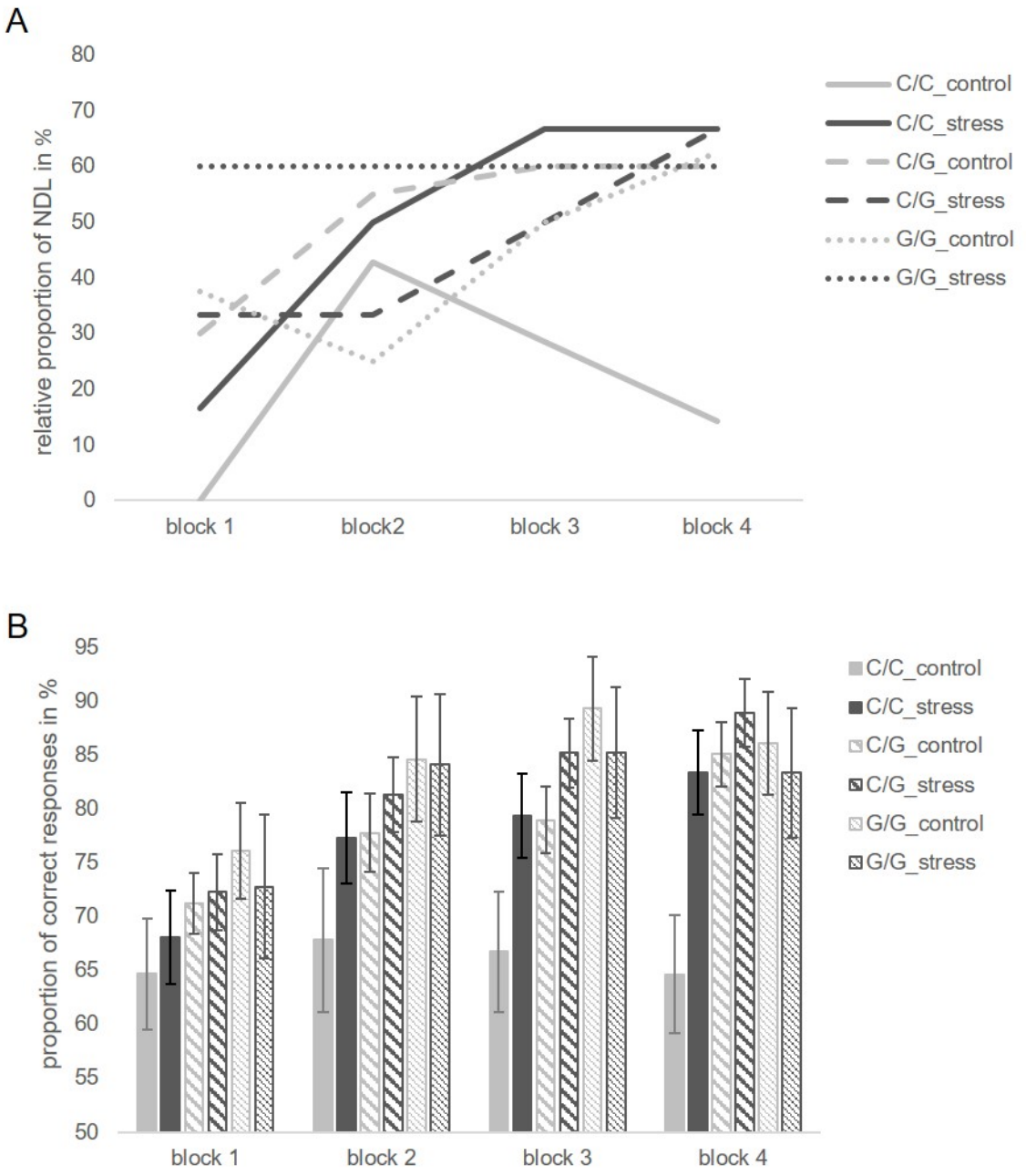
1. Genetics and stress reactivity

The relationship between genetic variants and HPA axis activity were additionally examined via 3 (rs2070951: C/C vs. C/G vs. G/G) x 5 (time: $t_{baseline}$,t_{+2},t_{+10},t_{+20},t_{+45}) mixed ANOVA with salivary cortisol concentration as dependent variable. Results showed a significant time x rs2070951 interaction ($F_{(3.92,\ 125.58)}$ = 2.57, p=.042, η^2=.074; main effect of genotype: rs2070951: $F_{(2,64)}$ = 2.81, p=.064, η^2=.081). Pairwise comparisons showed that C/C-carriers tended to exhibit a stronger cortisol secretion than C/G- ($F_{(1,53)}$ = 3.93, p=.053, η^2=.069) and G/G-carriers ($F_{(1,29)}$ = 3.54, p=.070, η^2=.109). C/G- and G/G-carriers did not differ in overall cortisol concentration (p=.624).



Supplemental Figure 1. Graphs in panel A show mean (± SE) progress of salivary cortisol concentration whereas panel B illustrates mean (± SE) progress of emotional stress in dependence of variants of rs2070951 (C/C vs. C/G vs. G/G) with respect to control and stress group. The stress induction and the learning task are represented by shaded areas. C/C-carriers exhibited a significant larger cortisol secretion than G-carriers. * p<.05

2. Genetics and stress effects on multiple memory systems



Supplemental Figure 2. Graphs in panel A represent the accumulated relative proportion of participants separated for treatment (stress vs. control) and rs2070951 (C/C vs. C/G vs. G/G), who adopted a non-declarative learning strategy in dependence of blocks of 50 trials during the weather prediction task. Bars in panel B show mean percentage of correct responses (± SE) in dependence of variants of rs2070951 (C/C vs. C/G vs. G/G) and treatment (stress vs. control). C/C-carriers of the control group exhibited significant less NDL in block 4 and a significant worse learning performance in comparison to all other participants.

The relationship between genetic variants (C/C, C/G, G/G) and learning strategy were examined via chi-square tests. There was no association between rs2070951 and choice of learning strategy (χ^2; p=.229). However, we found a trend-significant association between the *MR* SNP and learning strategy in block 4 ($\chi^2_{(1,35)}$ =4.85, p=.089) under control condition. C/C-

carriers in the control group less often switched to a non-declarative learning strategy than C/G- and G/G-carriers, whereas no difference between genotype with respect to learning strategy was observed in the stress group (all p>.959). Furthermore, C/G- and G/G-carriers do not differ in the frequency of the used learning strategy (p=.903). With regard to learning performance, C/C-carriers performed worse than C/G- and G/G-carriers (rs2070951: $F_{(2, 63)} = 4.19$, p=.019, $\eta^2 = .118$; Fig. 8B), whereas G/G- and C/G-carriers do not differ in learning performance (p=.389). Post-hoc ANOVAs separated per condition showed that the latter effect was restricted to the control group ($F_{(2,31)} = 4.46$, p=.020, $\eta^2 = .224$), whereas no significant difference in learning performance between variants of rs2070951 were observed under stress condition (p=.511).