Supplementary Material

Elevated Activity of the Sympathetic Nervous System Is Related to Diminished Practice Effects in Memory: A Pilot Study

**Subjective Stress and Mnemonic Task Performance**

Supplementary Table 1. Association between subjective stress scores and task performance

	LDI score session 2 R_s (p)	LDI difference score R_s (p)
VAS 1	-0.23(0.28)	-0.20 (0.33)
VAS 2	-0.18 (0.38)	-0.11 (0.57)
VAS 3	-0.11(0.6)	0.03 (0.88)

We tested the association between subjective stress and task performance with a spearman correlation.

VAS, visual analog scale; LDI, lure discrimination index

VAS 1: subjective stress score at baseline, VAS 2: subjective stress scores after MPA task, VAS 3: subjective stress score after encoding.
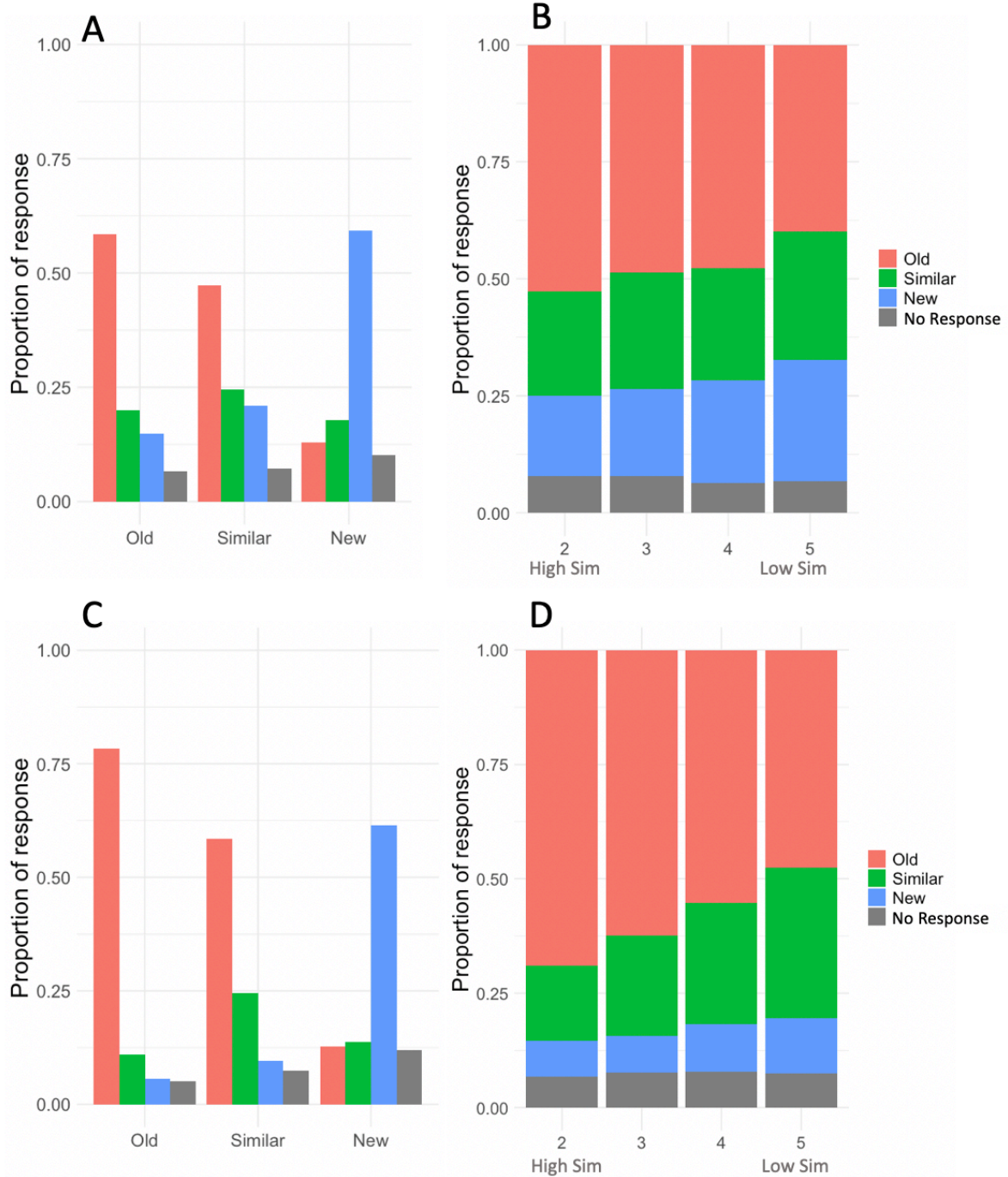
Supplementary Figure 1. Behavioral data for the entire group. A) Proportion of responses on the first assessment of the mnemonic discrimination task categorized per stimulus type. B) Proportion of responses for on the first assessment of the mnemonic discrimination task for the similar stimuli categorized by their mnemonic similarity. C) Proportion of responses for the entire group on the second assessment of the mnemonic discrimination task categorized per stimulus type. D) Proportion of responses for the second assessment of the mnemonic discrimination task for the similar stimuli categorized by their mnemonic similarity.

LDI Score Differences between Age Groups

There was no difference between the 40-50-year-old and the 60–75-year-old individuals on the LDI score during session 1 with a Wilcoxon rank sum test (Z=-1.17, p=0.24, r=-0.23; Supplementary Figure 2A).We observed a significant difference between the 40-50-year-old and the 60-75-year-old individuals on the LDI score during session 2 with a Wilcoxon rank sum test (Z=-2.42, p=0.01, r=-0.48; Supplementary Figure 2B). Subsequently, the LDI difference score between the 40–50-year-old and the 60–75-year-old was not significant (Z=-0.65, p=0.51, r=-0.13; Supplementary Figure 2C). The lower scores in older individuals as compared to the middle-aged is consistent with previous reports of Stark et al. (2013) showing age-related decreases in LDI scores. The lack in age-differences for the LDI difference score is not unexpected as we also did not find an age difference in LDI scores between the learners and non-learners, showing that change in LDI scores over time is not solely driven by age.
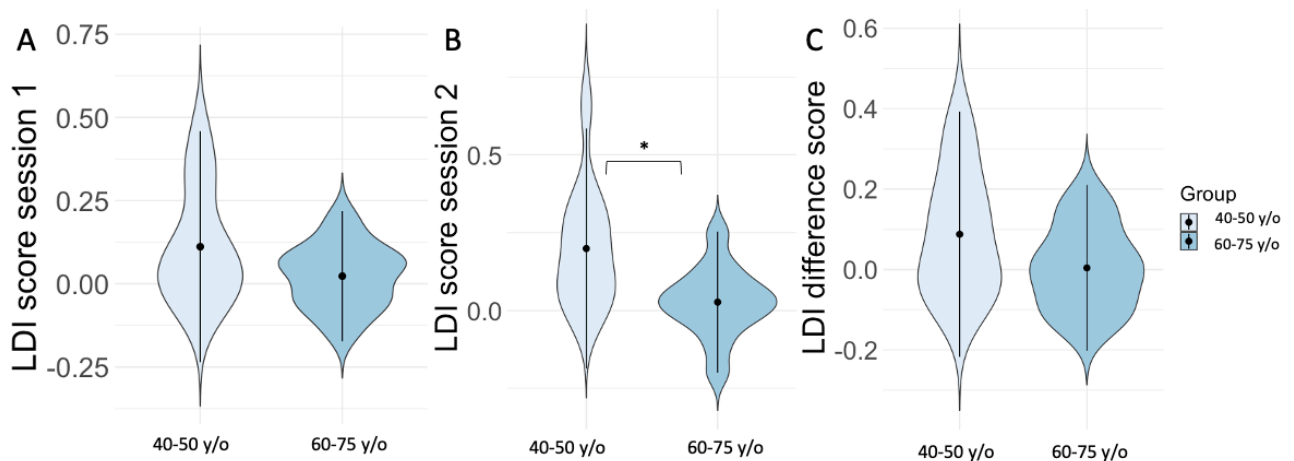
Supplementary Figure 2. Age group differences in LDI scores and LDI difference scores A) LDI score during session 1 for 40–50-year-old and 60–75-year-old. B) LDI score during session 2 for 40–50-year-old and 60–75-year-old. C) LDI difference score for 40–50-year-old and 60–75-year-old.

Learners versus Non-Learners: Interaction sAA and Age Group

Within the group of learners, we observed a significant interaction between age group as dichotomous variable and sAA levels after encoding on LDI difference scores while controlling for sAA baseline levels (b=0.005, t=3.8, p=0.004, R^2=0.34, Cohen's f^2=0.52, CI=[0.003, 0.008], BootstrappedCI=[0.002, 0.01]; Supplementary Figure 3A). No such interaction was observed for the non-learners (b=0.00015, t=0.39, p=0.71, R^2=0.02, Cohen's f^2=0.02, CI=[-0.0006, 0.0009], BootstrappedCI=[-0.001, 0.001]; Supplementary Figure 3B).
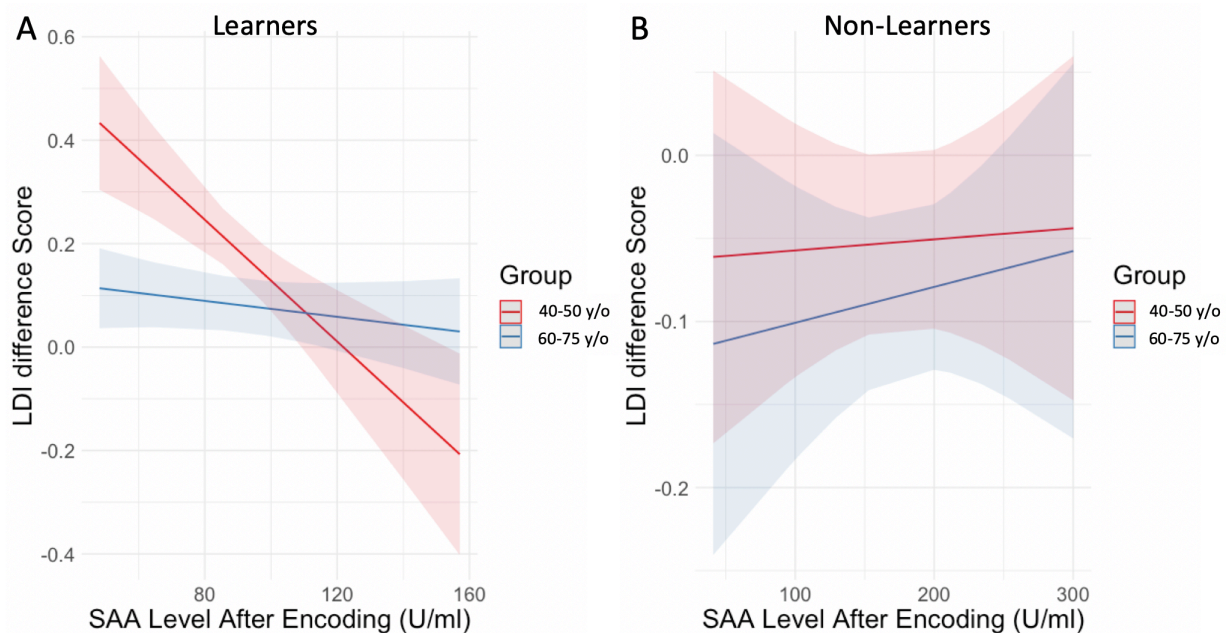
Supplementary Figure 3. A) For learners the interaction between age group and SAA levels after encoding showed higher practice effects for the younger participants when sAA levels after encoding are lower, as compared to the older participants. B) For non-learners, no interaction was found between age group and SAA levels after encoding. In A and B, sAA at baseline was added as covariate.