Supplemental Materials

**Locomotor Activity.** Four sound and light-attenuating cabinets contained clear acrylic cages (30 cm X 15 cm X 15 cm) with hole floors consisting of perforated stainless steel sheets with 6.4 mm diameter round holes on 9.5 mm staggered centers. Total activity in the box was assessed by Ethovision 5.0.216 computer software (Noldus, Leesburg, VA) that recorded activity via a ceiling mounted camera. Ethovision sampling rate was set at 29.97 samples per second. Locomotor activity was measured by total distance moved in cm over 30 min, with locomotor activity reported as distance moved (cm) per min.

**Experiment 1: Pre-Session Methylphenidate.** Activity was assessed over 2 days, with animals (n=4 per group) receiving a saline injection and being placed into the locomotor chamber on Day 1 followed by animals receiving methylphenidate (0, 2.5, 5, 10 & 20 mg/kg) and being placed into the locomotor chamber on Day 2. Animals had been exposed to drug (methylphenidate or sodium butyrate) and fear conditioning approximately 20 days prior to locomotor activity tests, but were matched for initial locomotor activity and prior experience across doses. A one-way ANOVA tested statistical differences between groups on each day.

**Experiment 2: Post-Session Methylphenidate.** Activity was assessed over 5 days, with animals (n=4 per group) receiving saline following a 12-min context exposure on all days except day 2, when they received methylphenidate (0, 2.5, 5, 10, 20, 40 mg/kg). Animals were drug naïve, but had received fear conditioning approximately 20 days prior to locomotor testing. Animals were placed in a plexiglas cylinder, 21.5 cm in diameter and 23 cm in height placed on the locomotor chamber floor to measure locomotor activity within an identical space as used in fear conditioning studies. A one-
way ANOVA tested for statistical differences on each day, in addition to a repeated measures ANOVA that tested for statistical differences across days 3-5 to match fear conditioning statistical protocol.

**Titles and Legends to Figures**

**Figure 1. Pre-session methylphenidate (10 & 20 mg/kg) increases spontaneous locomotor activity.** There were no differences between doses on Day 1, but a one-way ANOVA confirmed an effect of dose on Day 2 (F(4,15)=22.8, p<.0005). Post-hoc Dunnett’s test confirmed that 10 and 20 mg/kg were significantly different from saline with p<.001 for 10 mg/kg and p<.0005 for 20 mg/kg.

**Figure 2. Post-session methylphenidate has no effect on locomotor behavior.** One-way ANOVAs for each day confirmed that there were no dose effects, as well as a repeated measures ANOVA for Session 3-5 confirmed no dose effect. Post-hoc Dunnett’s tests also confirmed there were no differences between saline and any methylphenidate treated group. Black arrow indicates post-session drug administration.
Figure 1.

Distance Moved (cm per min)

Session

- 0 mg/kg
- 2.5 mg/kg
- 5 mg/kg
- 10 mg/kg
- 20 mg/kg
Figure 2.