

Supplemental Materials

Control Alters Risk-Taking: The Motivating Impact of Action-Effectiveness in Different Risk Contexts

Experiment 1

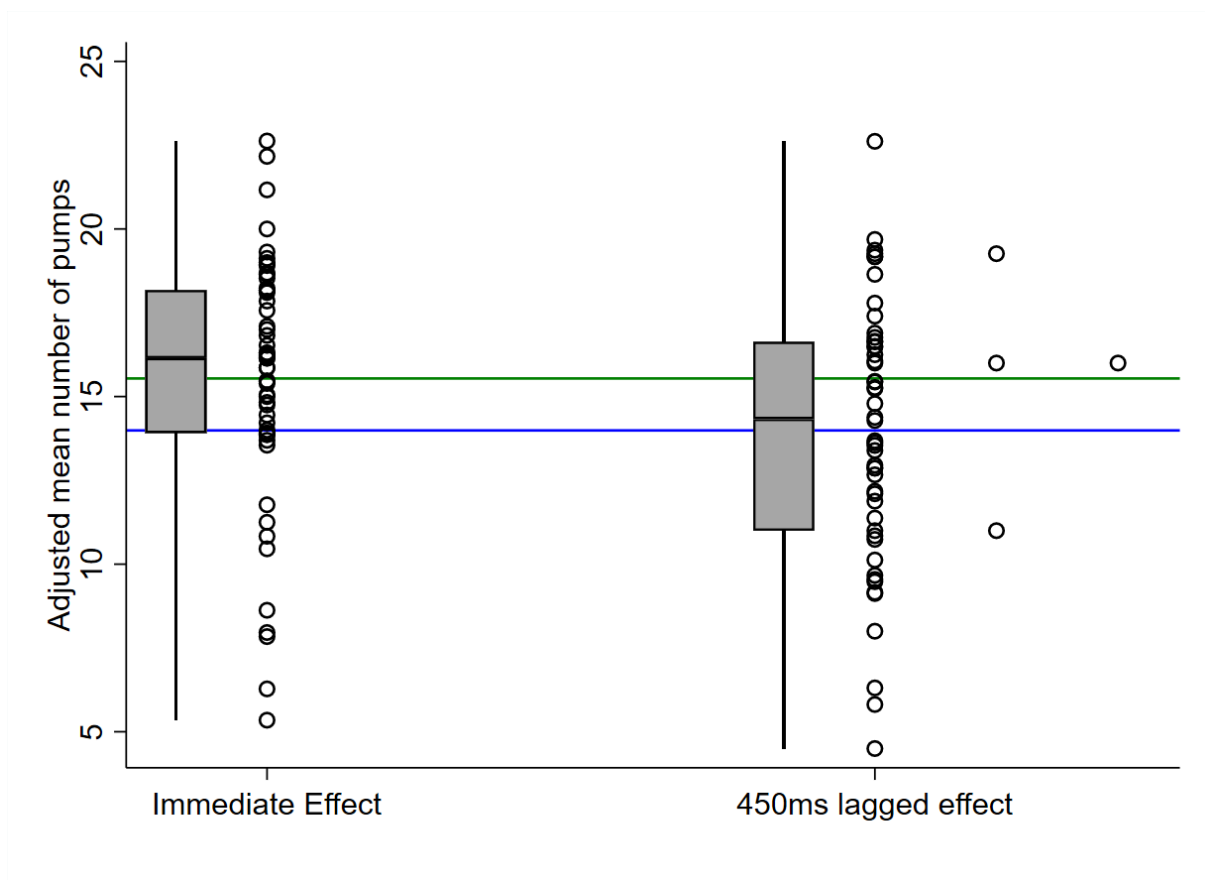


Figure S1. A box-plot and a dot-plot describing the adjusted mean number of pumps as a function of action-effect temporal contiguity. The green and the blue horizontal lines depict the Immediate and the 450ms lagged effect conditions' mean, accordingly.

Impulsivity trait level

Items in the BIS-11 questionnaire yielded a satisfying internal consistency ($\alpha=.84$). First, there was no significant correlation between participants' mean impulsivity score and adjusted mean number of pumps ($r=.24, p=.07$) and the number of explosions ($r=.24, p=.07$). Next, we explored whether action-effectiveness interacted with impulsivity trait level to affect risk-taking behavior. Participants were assigned to High (above $1SD$), Medium (between $-1SD$ and $1SD$) or Low (below $-1SD$) impulsivity groups ($M= 66.07, SD= 10.68$). A two-way mixed model ANOVA with Impulsivity as a between-subject factor and Temporal contiguity as a within-subject factor on the adjusted mean number of pumps yielded a main-effect of Temporal contiguity [$F_{(1, 51)}= 11.88, \eta^2_{\text{partial}}=.18, p=.001, BF_{10}=2401$ (very strong evidence)] and no main-effect of Impulsivity [$F_{(2, 51)}= 1.57, \eta^2_{\text{partial}}=.05, p=.21, BF_{10}=0.66$ (inconclusive)]. Interestingly, there was a significant interaction between Impulsivity and Temporal contiguity [$F_{(2, 51)}= 4.36, \eta^2_{\text{partial}}=.14, p=.01, BF_{10}=3.45$ (substantial evidence)]. Specifically, Bonferroni-adjusted comparisons between the Immediate and the Lag conditions in each level of impulsivity revealed that the adjusted mean number of pumps was significantly higher in the Immediate than in the Lag condition in the High [$F_{(1, 51)}= 11.08, p=.004, CI_{95 \text{ contrast}} (-4.37, -.64)$] and the Medium [$F_{(1, 51)}= 25.85, p<.001, CI_{95 \text{ contrast}} (-2.61, -.9)$] impulsivity groups; but not in the Low impulsivity group [$F_{(1, 51)}= 0.29, p=1, CI_{95 \text{ contrast}} (-1.46, 2.27)$].

Experiment 2

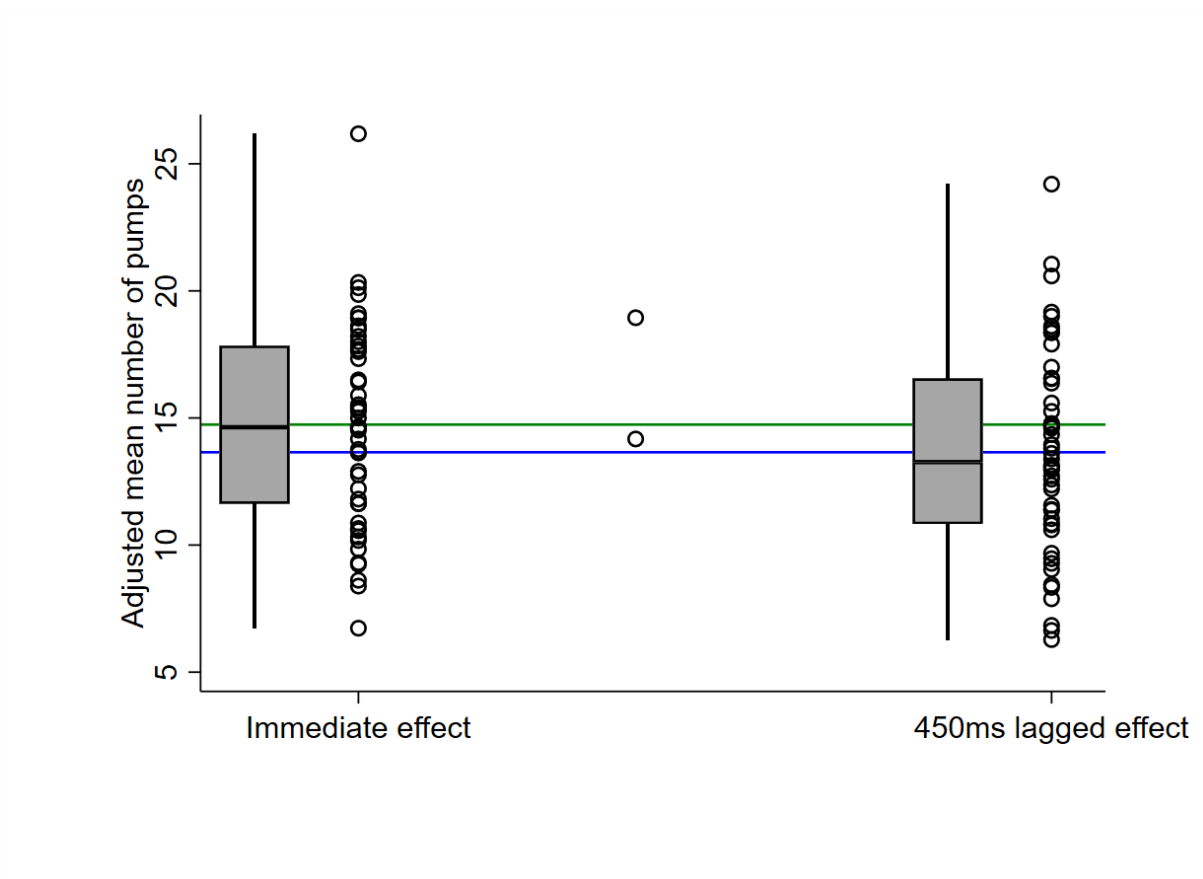


Figure S2. A box-plot and a dot-plot describing the adjusted mean number of pumps as a function of action-effect temporal contiguity. The green and the blue horizontal lines depict the Immediate and the 450ms lagged effect conditions' mean, accordingly.

Impulsivity trait level

Items in the BIS-11 questionnaire yielded a satisfying internal consistency ($\alpha=.83$). First, we found no significant correlation between the mean impulsivity score and the number of explosions ($r=.21, p=.13$) and the adjusted mean number of pumps ($r=.16, p=.24$). Next, we explored whether Temporal contiguity interacted with impulsivity trait level to affect pumping responses. Participants were assigned to High (above $1SD$), Medium (between $-1SD$ and $1SD$) or Low (below $-1SD$) impulsivity groups ($M= 66.24, SD= 9.33$). A two-way mixed model ANOVA with Impulsivity as a between-subject factor and Temporal contiguity as a within-subject factor on the adjusted mean number of pumps yielded a main-effect of

Temporal contiguity [$F_{(1, 47)} = 10.87$, $\eta^2_{\text{partial}} = .18$, $p = .001$, $BF_{10} = 62$ (very strong evidence)] and no main-effect of Impulsivity [$F_{(2, 47)} = 1.52$, $\eta^2_{\text{partial}} = .06$, $p = .22$, $BF_{10} = 0.87$ (inconclusive)]. Different from Experiment 1, there was no interaction between Impulsivity and Temporal contiguity [$F_{(2, 47)} = 0.4$, $\eta^2_{\text{partial}} = .01$, $p = .67$, $BF_{10} = 0.24$ (substantial support for the null)].

Experiment 3

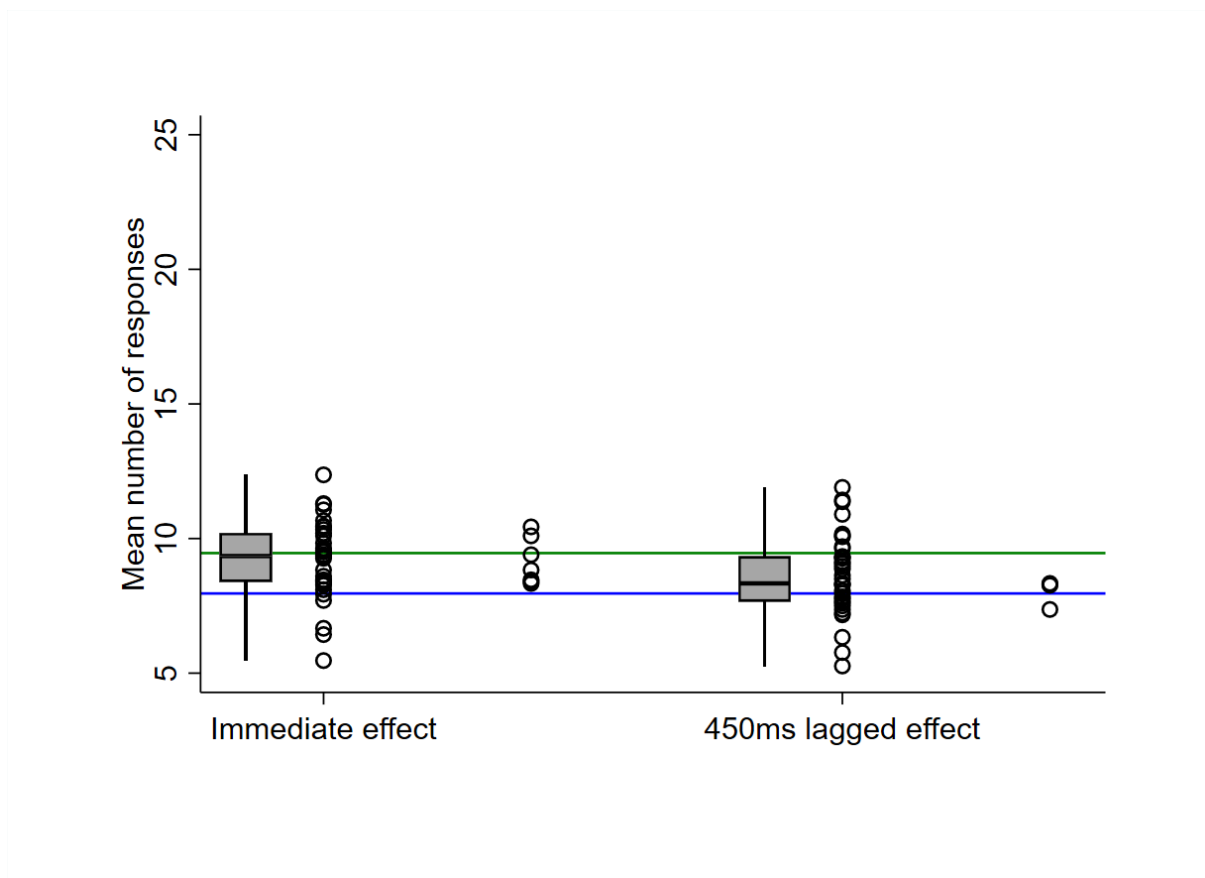


Figure S3. A box-plot and a dot-plot describing the adjusted mean number of pumps as a function of action-effect temporal contiguity. The green and the blue horizontal lines depict the Immediate and the 450ms lagged effect conditions' mean, accordingly.

Impulsivity trait level

Items in the BIS-11 questionnaire yielded a satisfying internal consistency ($\alpha=.87$). No correlation was found between impulsivity score and the mean number of deflation responses ($r=.03, p=.82$). Next, we explored whether action-effectiveness interacted with impulsivity trait level to affect mean deflation responses. Participants were assigned to High (above $1SD$), Medium (between $-1SD$ and $1SD$) or Low (below $-1SD$) impulsivity groups ($M=64.1, SD=11.66$). A two-way mixed model ANOVA with Impulsivity as a between-subject factor and Temporal contiguity as a within-subject factor on the mean number of deflation responses yielded a main-effect of Temporal contiguity [$F_{(1, 35)}=10.57, \eta^2_{\text{partial}}=.23, p=.002, BF_{10}=541$ (very strong evidence)] and no main-effect of Impulsivity [$F_{(2, 35)}=0.3, \eta^2_{\text{partial}}=.01, p=.73, BF_{10}=0.5$ (inconclusive)]. Different from Experiment 1 and consistent with Experiment 2, there was no significant interaction between Impulsivity and Temporal contiguity [$F_{(2, 35)}=0.39, \eta^2_{\text{partial}}=.02, p=.67, BF_{10}=0.31$ (inconclusive)].