

Supplemental Material

Behind Closed Doors:

The Effect of Depressive Symptoms on Risky Choices under Time Pressure

Kaileigh A. Byrne, Hunter C. Willis, Caitlin Peters, Deborah Kunkel, and Thomas P. Tibbett

Clemson University

Analysis for Learning Effects

Experiment 1A

To assess whether individuals performed differently on the risky decision-making task over time, we examined participants' trial-by-trial changes in risk preference using a mixed effects logistic regression via the *lme4* module of the R statistical package, version 3.4.1. Risk preference was coded as 0 for a low risk selection on a given trial and 1 was coded as high risk. Only the high and low expected value trials were included in the analysis, as the catch and single door trials are not designed to capture risky decision-making. Trial Block (1 – 4) and Outcome Magnitude (High Expected Value vs. Low Expected Value) were included as predictors. The specific syntax for this mixed-effects logistic regression model was: Risk_Preference ~ Block * OutcomeMagnitude + (Block * OutcomeMagnitude | Participant). The results of this analysis showed a significant Block X Outcome Magnitude interaction, $\beta = -.18, p < .01$ (Figure S3). Individuals made fewer low magnitude risky selections over time. Follow-up tests showed significant differences in low magnitude risky choices between Block 1 and 2, Block 1 and 3, and Block 1 and 4. Moreover, individuals selected more high magnitude options across the course of the task; follow-up tests showed significant differences between Block 1 and 2, Block 1 and 3, and Block 1 and 4. The main effects of Block ($p = .12$) and Outcome Magnitude ($p = .09$) were nonsignificant. These results suggest that individuals learned the risk contingencies over time and altered their decisions in the latter trial blocks.

Next, a separate mixed effects logistic regression was performed to examine the effect of depressive symptoms on risk preference under pressure over the course of the entire risky decision-making task. Depressive symptoms were assessed as a continuous measure using the Depressed Affect subscale of the CES-D scale. Pressure Condition and Outcome Magnitude

were also included as predictors, and Age was included as a covariate. The syntax for this mixed-effects logistic regression model was: Risk_Preference ~ CESD_DepressedAffect * PressureCondition * OutcomeMagnitude + (CESD_DepressedAffect * PressureCondition * OutcomeMagnitude | Participant) + Age. Results of this analysis did not reveal any significant interactions or main effects however, $ps > .20$. This result suggests that the effect of depressed affect symptoms on risky choice were specific to the test phase (Block 3 and 4) of the task.

Experiment 2

As with Experiment 1, a mixed effects logistic regression was conducted to gauge participants' trial-by-trial changes in risk preference across the entire risky decision-making task. The results of this analysis showed a significant Block X Outcome Magnitude interaction, $\beta = -.32, p < .001$ (Figure S2). In line with Experiment 1, individuals made fewer low magnitude risky selections over time. Follow-up tests showed significant differences between Block 1 and 4 and between Block 2 and 4, indicating learning of risk contingencies over time. Furthermore, the main effect of Block was also significant, $\beta = .17, p < .01$. The main effect Outcome Magnitude ($p = .24$) was nonsignificant.

An additional mixed effects logistic regression was conducted to assess the effect of depressive symptoms on risk preference under pressure across all trials. Results indicate that the Depressed Affect symptoms were associated with diminished risk-taking across all trials ($\beta = .06, p < .01$). No other main effects or interactions were observed in Experiment 2. This outcome indicates that depressed affect symptoms were associated with a diminished preference for risky choices throughout the task. However, the effect of time pressure on the relationship between depressive symptoms and risk preference was specific to the test phase of the task.

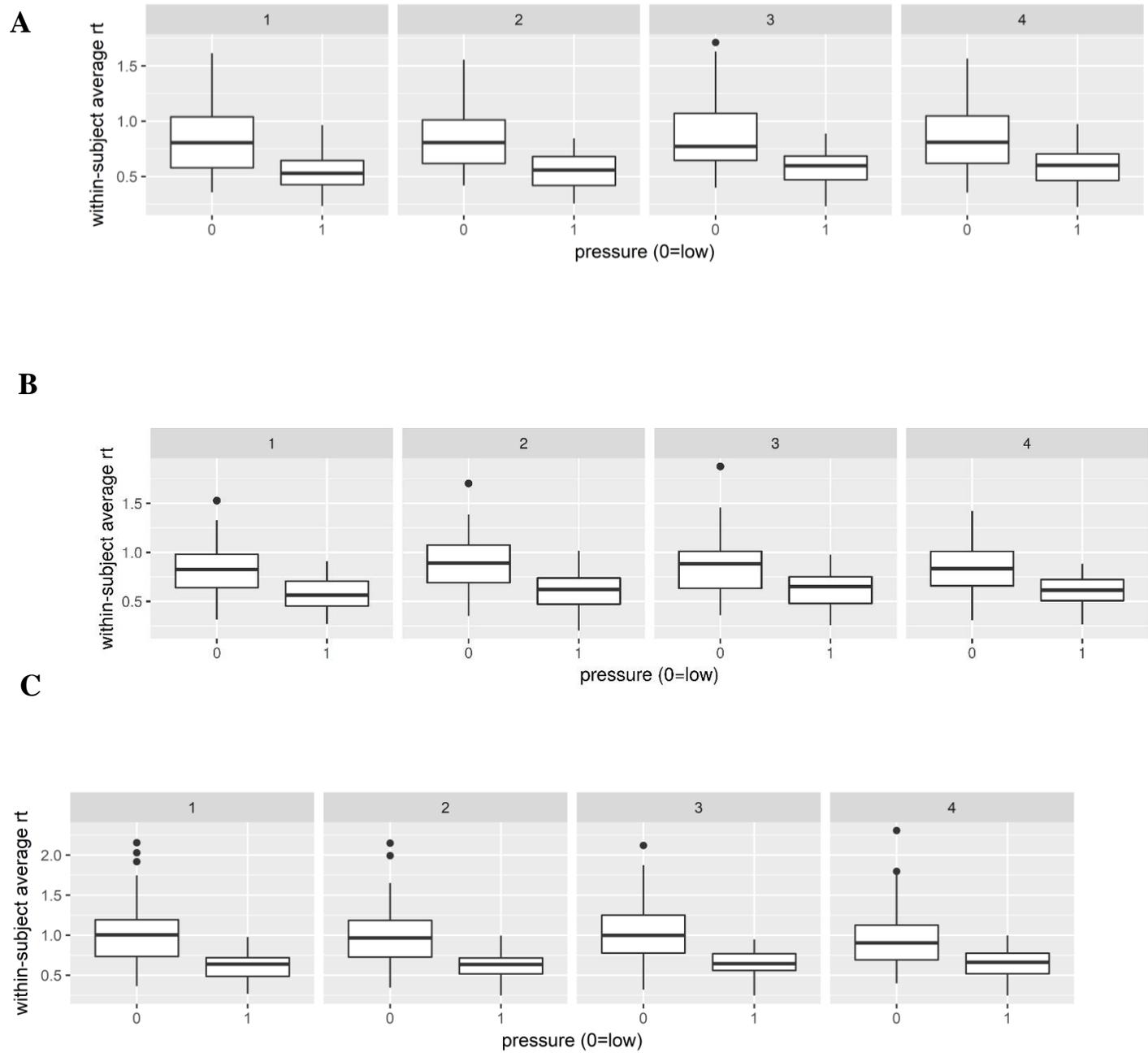


Figure S1. Average reaction times in the Risky Decision-Making task in Experiment 1A gain condition (A), Experiment 1B gain condition (B) and Experiment 2 loss condition (C) by each of the four trial blocks. In Experiments 1A (A), 1B (B) and 2 (C), individuals in the high time pressure condition responded faster and thus made quicker decisions than those in the low pressure condition, $ps < .001$.

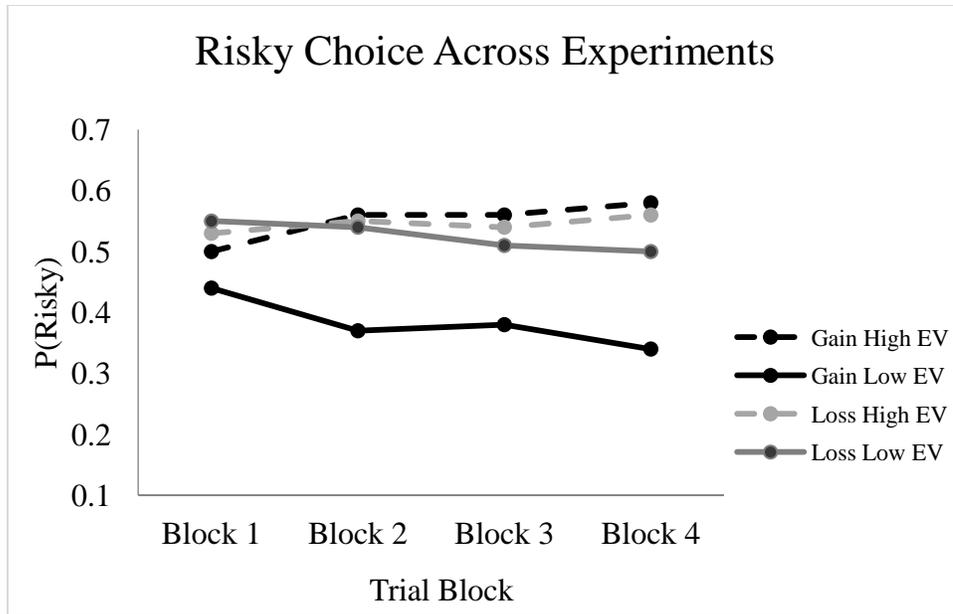


Figure S2. Average proportion of risky option selections across all trials of the Risky Decision-Making task in Experiment 1 (gains) and 2 (losses) based on the magnitude of expected values. High magnitude options (dashed line) and low magnitude options (solid line) are shown separately. In both Experiment 1 and 2, individuals' risky selections changed over time depending on the magnitude of the outcome, $p < .01$.