

Supplementary Information

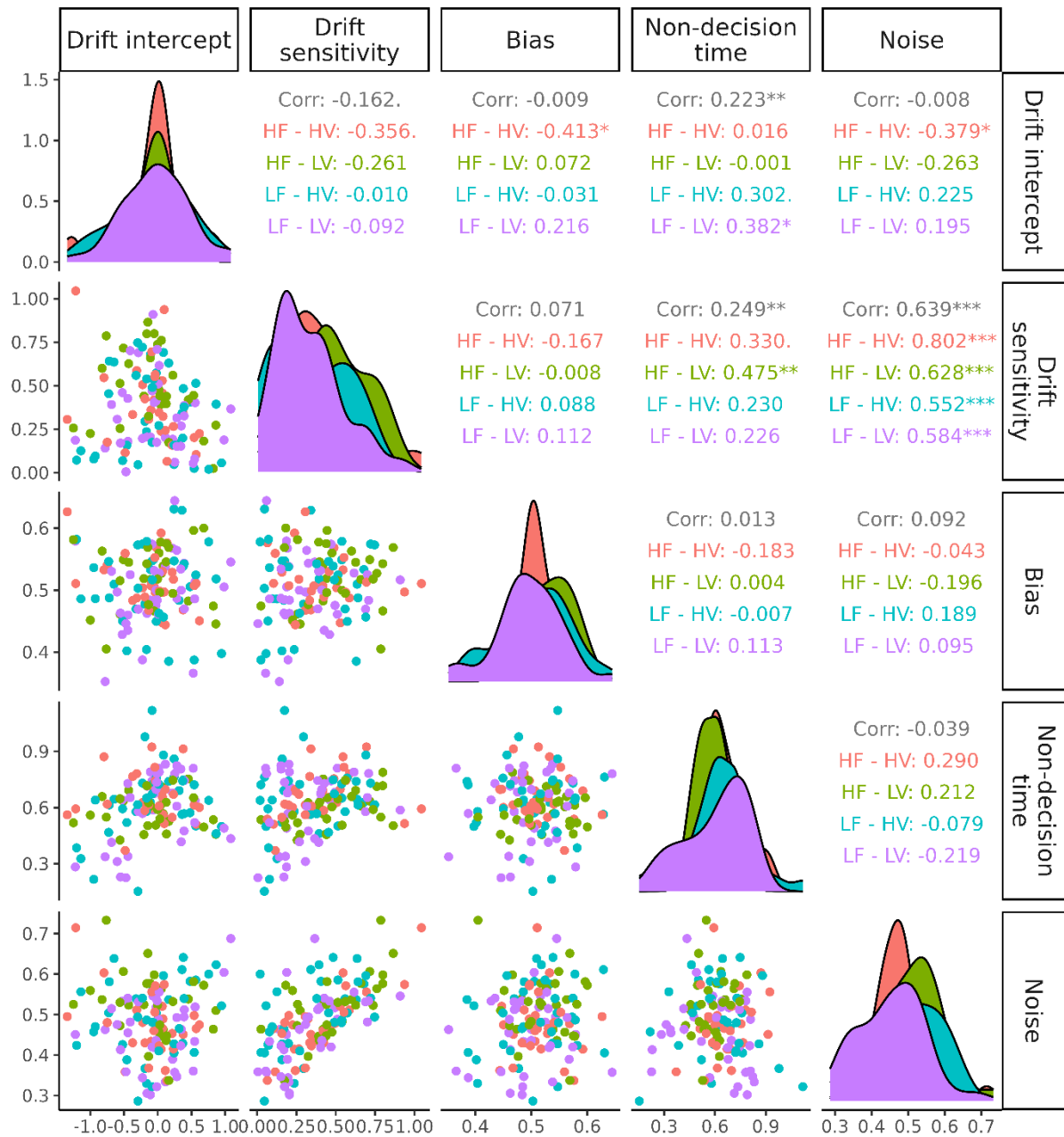


Fig S1

Supplementary Figure 1. Correlations between DDM parameters across subjects. Pearson correlation coefficients are shown for both contexts together (gray) and separately for the different combinations of order (HF: high-volatility first; LF: low-volatility first) and context (HV: high volatility; LV: low-volatility). The noise and drift sensitivity parameters were highly and positively correlated for all combinations, as expected. One participant with non-decision

time much higher than the rest (~ 2.3 s in both contexts) was removed for better visualization.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Parameter Recovery

First, we calculated the ranges of the empirical parameters and sampled sets of DDM parameters 100 times (simulated subjects), assuming the parameters were independent and uniformly distributed within a range 5% larger than that of the respective empirical values.

For each simulated subject, we generated choices and response times with a DDM model. The sequences of delayed rewards presented corresponded to the same as the real subjects had experienced. Only common trials were considered, since only those were used later to fit the model to the simulated data.

We fitted the model to the simulated choice data to recover the parameters. For all the parameters, the correlation between the true and estimated values was high (≥ 0.75), especially for the main parameters of interest, and their relationship did not show systematic departures from the identity line that could compromise our conclusions (Figure S2). The accuracy of the recovery was thus satisfactory.

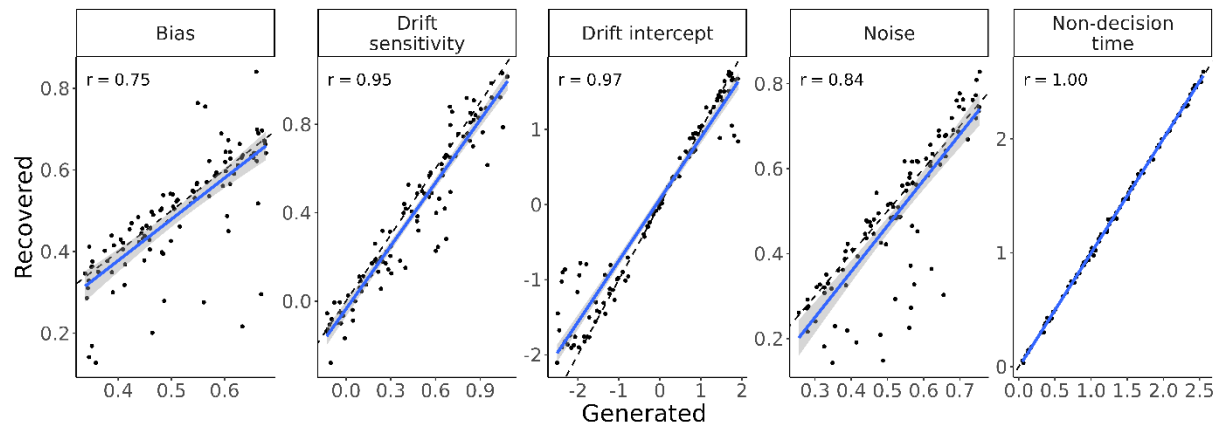


Fig S2

Supplementary Figure 2. Parameter recovery. The values generated were correlated with the recovered values for all the model parameters. The continuous blue line denotes the regression line, and the dashed black line is the identity line.

Tables

Table S1

Supplementary Table 1. Fixed-effects linear regression results for (log) reaction times in the binary choice phase. *Significant effect (95% CI excludes 0).

Predictor	Estimate	Est.Error	95% CI
Intercept	0.267	0.274	[0.202, 0.334]*
Context (low volatility)	-0.051	0.023	[-0.095, -0.006]*

Table S2

Supplementary Table 2. Fixed-effects linear regression results for (log) reaction times in the binary choice phase. This model controlled also for order (high-volatility first or low-volatility first) and whether the response was immediate or delayed. This additional correction was not preregistered and thus we report this model separately from the one that was preregistered (cf. Supplementary Table 1). *Significant effect (i.e., 95% CI excludes 0).

Predictor	Estimate	Est.Error	95% CI
Intercept	0.309	0.275	[0.238, 0.379]*
Order (low volatility first)	-0.076	0.065	[-0.206, 0.051]
Context (low volatility)	-0.175	0.018	[-0.210, -0.141]*
Order (low volatility first) x context (low volatility)	0.223	0.035	[0.155, 0.292]*

Table S3

Supplementary Table 3. Fixed-effects linear regression results for (log) reaction times in the binary choice phase. In addition to controlling for order, this model controlled for the later amount offered and whether the response was immediate or delayed. This additional correction was not preregistered and thus we report this model separately from the one that was preregistered (cf. Supplementary Table 1). *Significant effect (i.e., 95% CI excludes 0).

Predictor	Estimate	Est.Error	95% CI
Intercept	0.353	0.281	[0.271, 0.431]*
Order (low volatility first)	-0.041	0.061	[-0.160, 0.080]
Context (low volatility)	-0.174	0.019	[-0.212, -0.138]*
Choice (later option)	-0.018	0.025	[-0.066, 0.032]
Later reward (centered)	0.032	0.006	[0.020, 0.045]*
Later reward (centered) squared	0.002	0.003	[-0.004, 0.009]
Order (low volatility first) x context (low volatility)	0.226	0.035	[0.158, 0.295]*
Choice (later option) x later reward (centered)	-0.081	0.012	[-0.106, -0.059]*
Choice (later option) x later reward (centered) squared	0.003	0.006	[-0.008, 0.014]

Table S4

Supplementary Table 4. Logistic regression results for choice outcomes in the binary choice phase. *Significant effect (i.e., 95% CI excludes 0).

Predictor	Estimate	Est.Error	95% CI
Intercept	-1.418	0.44	[-2.282, -0.556]*
Context (low volatility)	0.082	0.142	[-0.207, 0.351]
Later reward (centered)	2.827	0.225	[2.394, 3.283]*
Context (low volatility) x later reward (centered)	0.657	0.144	[0.381, 0.947]*

Table S5

Supplementary Table 5. Logistic regression results for choice outcomes in the binary choice phase. This model controlled also for order (high-volatility first or low-volatility first). This additional correction was not preregistered and thus we report this model separately from the one that was preregistered (cf. Supplementary Table 4). *Significant effect (i.e., 95% CI excludes 0).

Predictor	Estimate	Est.Error	95% CI
Intercept	-1.43	0.643	[-2.720, -0.202]*
Order (low volatility first)	-0.003	0.875	[-1.718, 1.745]
Context (low volatility)	-0.042	0.186	[-0.416, 0.308]
Later reward (centered)	3.23	0.325	[2.604, 3.880]*
Order (low volatility first) x context (low volatility)	0.284	0.245	[-0.189, 0.773]
Order (low volatility first) x later reward (centered)	-0.704	0.439	[-1.570, 0.166]
Context (low volatility) x later reward (centered)	0.803	0.197	[0.433, 1.201]*
Order (low volatility first) x later reward (centered)	-0.333	0.259	[-0.846, 0.173]